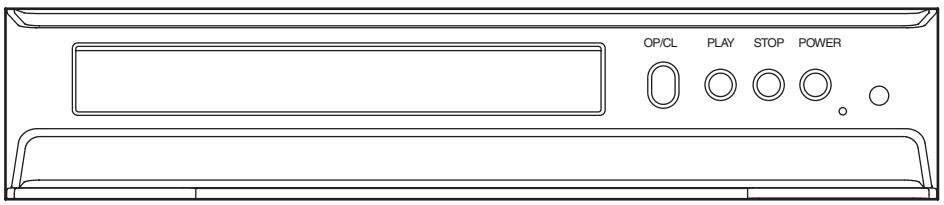
Symphonic

SERVICE MANUAL

DVD PLAYER

SD200E



IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

TABLE OF CONTENTS

Specifications 1-1-1
Laser Beam Safety Precautions 1-2-1
Important Safety Precautions 1-3-1
Standard Notes for Servicing 1-4-1
Cabinet Disassembly Instructions 1-5-1
Block Diagrams 1-6-1
Schematic Diagrams / CBA's and Test Points 1-7-1
Waveforms 1-8-1
Wiring Diagram 1-9-1
Firmware Renewal Mode 1-10-1
System Control Timing Charts 1-11-1
Lead Identifications 1-12-1
Exploded Views 1-13-1
Mechanical Parts List 1-14-1
Electrical Parts List 1-15-1

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SPECIFICATIONS

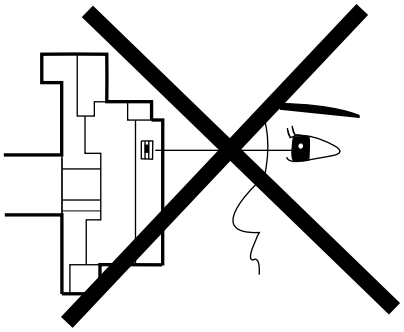
ITEM	CONDITIONS	UNIT	NOMINAL	LIMIT
1. Video Output	75 ohm load	Vpp	1.0	± 0.1
2. Coaxial Digital Out	75 ohm load	mVpp	500	± 50
3. Audio (PCM)				
3-1. Output Level	1 kHz 0 dB	Vrms	2.0	
3-2. S/N		dB	120	
3-3. Freq. Response				
DVD	fs=48kHz ± 0.5dB	Hz	20~22 k	
CD	fs=44.1kHz ± 0.5dB	Hz	20~20 k	
3-4. THD+N				
DVD	1 kHz 0dB	%	0.004	
CD	1 kHz 0dB	%	0.0045	

NOTES:

1. All Items are measured without pre-emphasis unless otherwise specified.
2. Power supply : AC120 V 60 Hz
3. Load imp. : 100 k ohm
4. Ambient Temperature : +25 °C

LASER BEAM SAFETY PRECAUTIONS

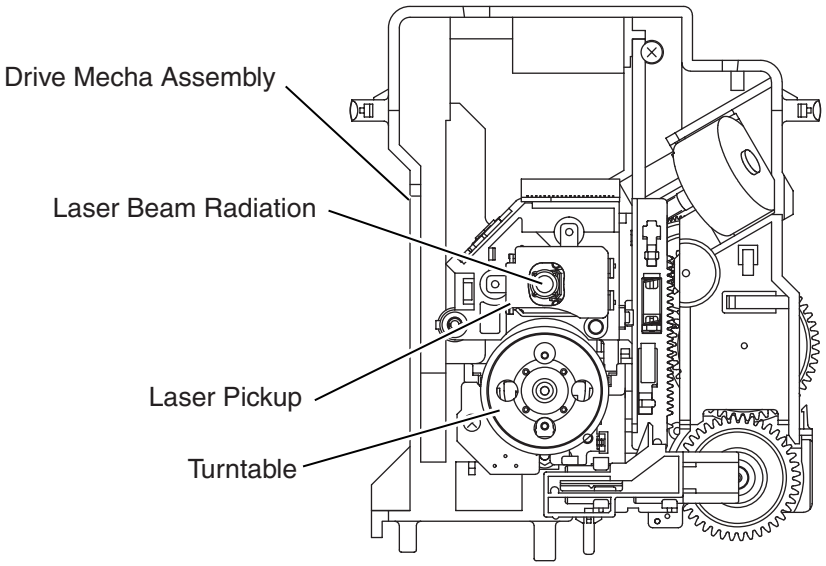
This DVD player uses a pickup that emits a laser beam.



Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

Caution: Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.



CAUTION
LASER RADIATION
WHEN OPEN. DO NOT
STARE INTO BEAM.

Location: Top of DVD mechanism.

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced**.**

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1)Wires covered with PVC tubing

2)Double insulated wires

3)High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1)Insulation tape

2)PVC tubing

3)Spacers

4)Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Be careful that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure

1)Remove the old connector by cutting the wires at a point close to the connector.

Important: Do not re-use a connector. (Discard it.)

2)Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3)Align the lengths of the wires to be connected. Insert the wires fully into the connector.

4)Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1: Ratings for selected area

AC Line Voltage	Clearance Distance (d), (d')
120 V	≥ 3.2mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

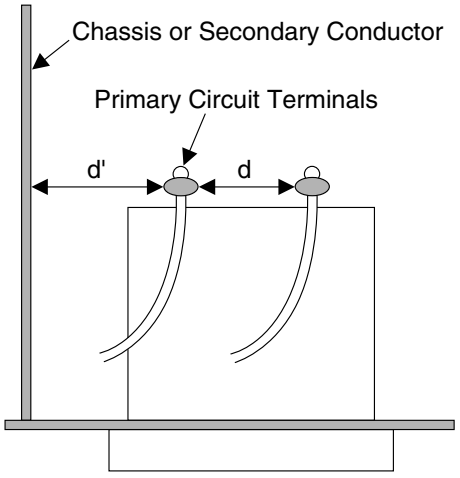


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

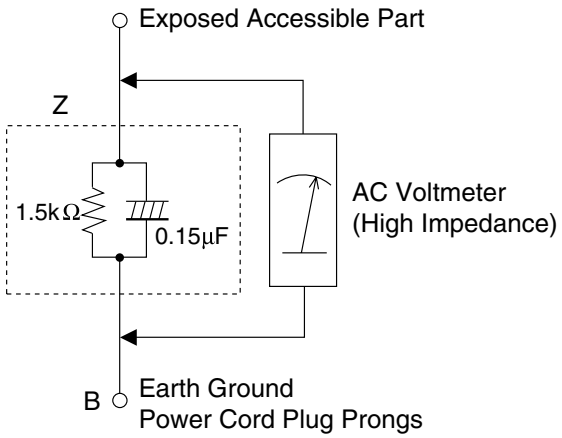


Fig. 2

Table 2: Leakage current ratings for selected areas

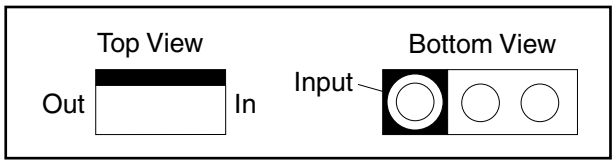
AC Line Voltage	Load Z	Leakage Current (i)	Earth Ground (B) to:
120 V	0.15μF CAP. & 1.5kΩ RES. Connected in parallel	i≤0.5mA Peak	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

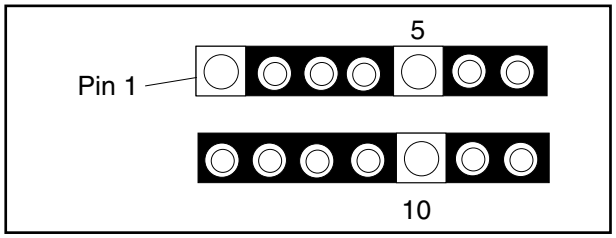
STANDARD NOTES FOR SERVICING

Circuit Board Indications

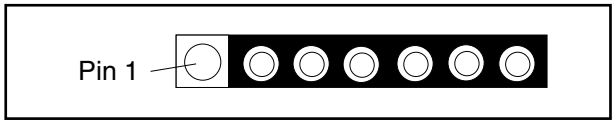
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



2. For other ICs, pin 1 and every fifth pin are indicated as shown.

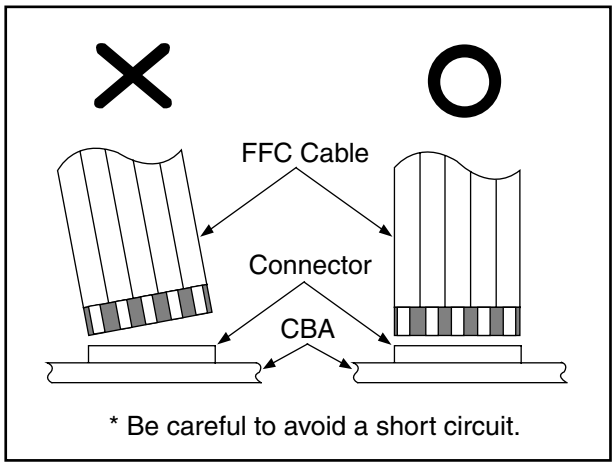


3. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



Pb (Lead) Free Solder

When soldering, be sure to use the Pb free solder.

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:.

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

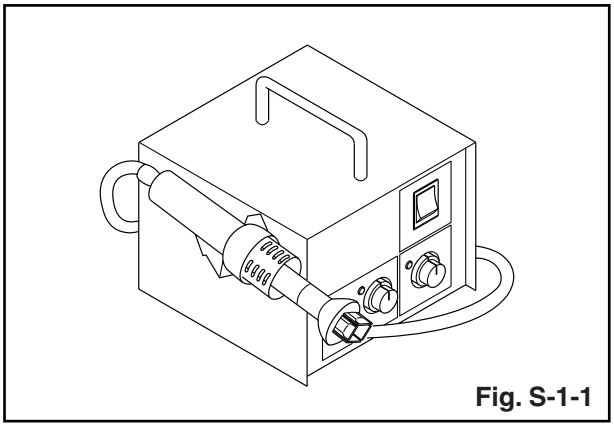


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

3. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

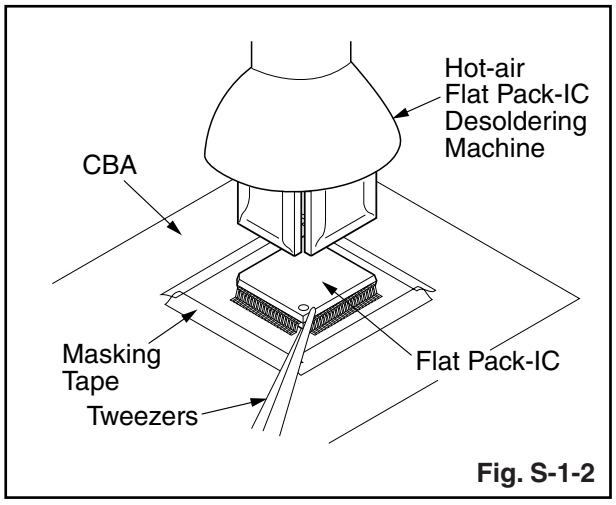


Fig. S-1-2

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

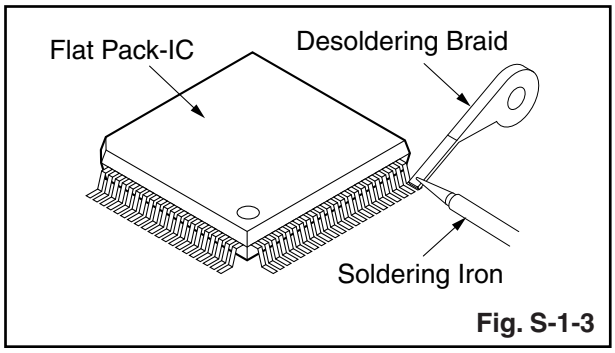


Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

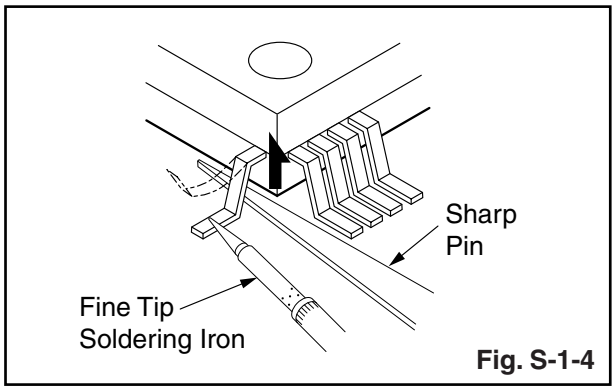


Fig. S-1-4

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.

(4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

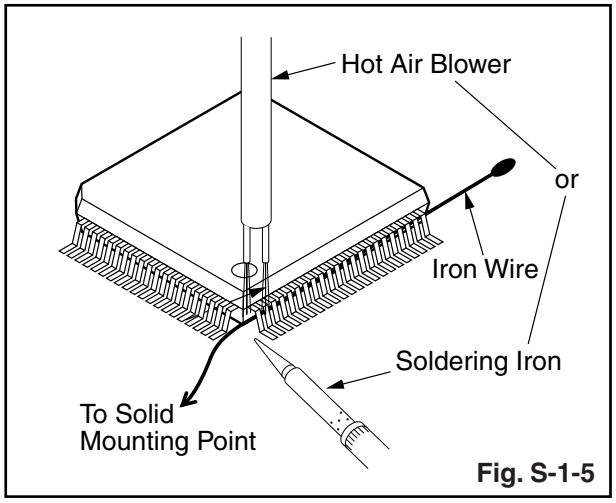


Fig. S-1-5

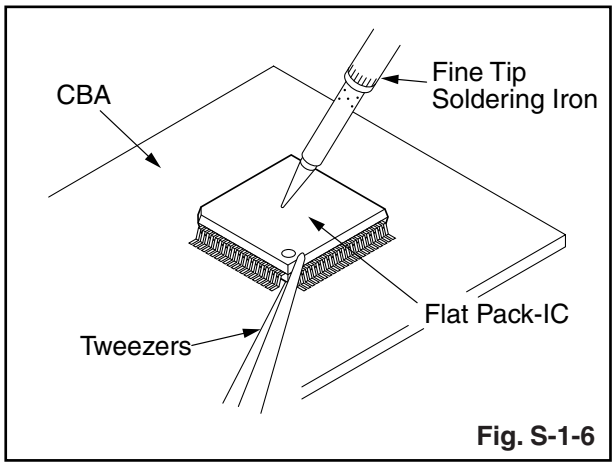


Fig. S-1-6

2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

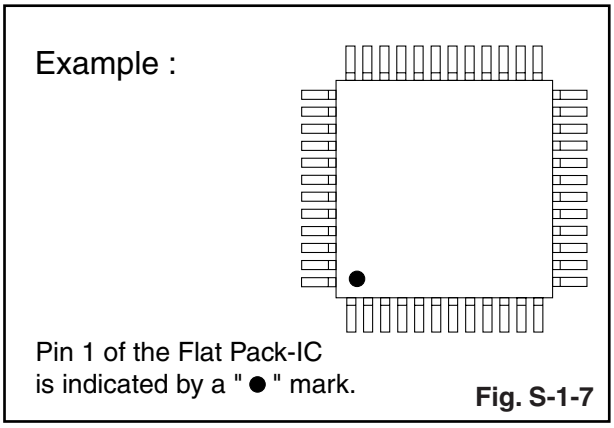


Fig. S-1-7

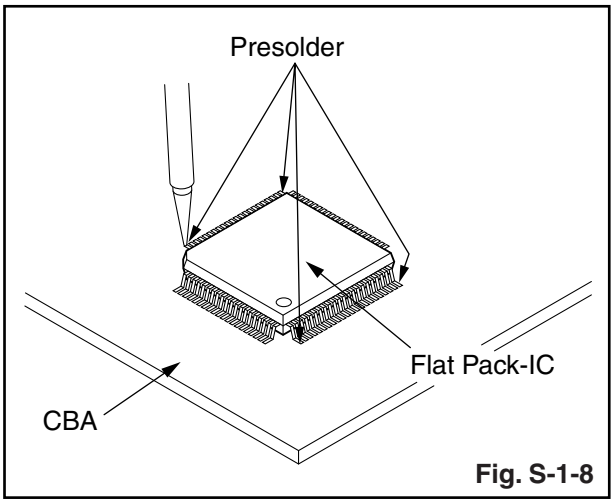


Fig. S-1-8

Instructions for Handling Semi-conductors

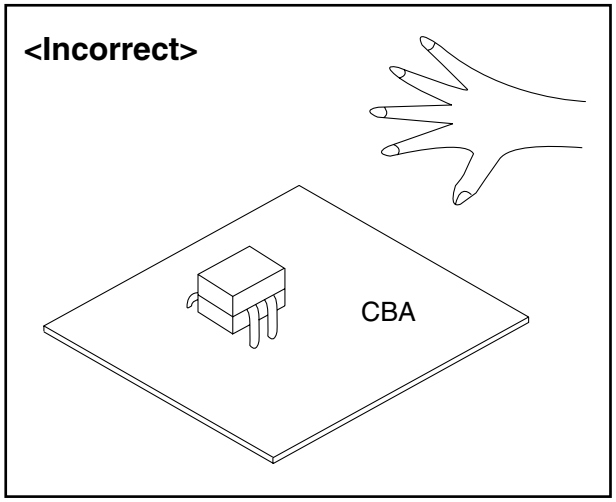
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

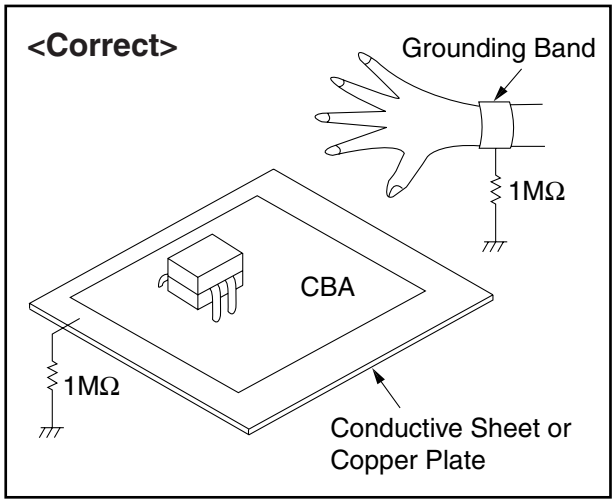
1. Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

(1) Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.

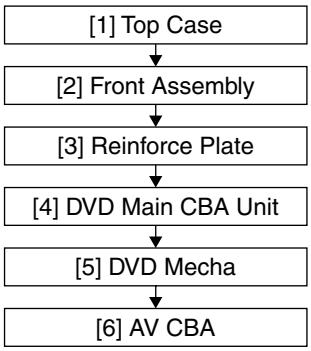




CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Top Case	D1	2(S-1)	-
[2]	Front Assembly	D2	*3(L-1), *3(L-2)	1 1-1 1-2
[3]	Reinforce Plate	D3	3(S-2)	-
[4]	DVD Main CBA Unit	D4	(S-3A), (S-3B) *CN201, *CN301, *CN401, *CN601	2 2-1 2-2
[5]	DVD Mecha	D4, D5	4(S-4)	2 3
[6]	AV CBA	D6	3(S-5), 4(S-6), *3(L-3)	-
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)

(1): Identification (location) No. of parts in the figures

(2): Name of the part

(3): Figure Number for reference

(4): Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw,
CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

(5): Refer to “Reference Notes.”

About tightening screws

When tightening screws, tighten them with the following torque.

Screws	Torque
(S-1), (S-2), (S-3A), (S-4), (S-5), (S-6)	0.45 ± 0.05 N·m
(S-3B)	0.38 ± 0.04 N·m

Reference Notes

CAUTION 1: Locking Tabs (L-1) and (L-2) are fragile. Be careful not to break them.

1-1. Release three Locking Tabs (L-1). Then, release three Locking Tabs (L-2).

1-2. Remove the Front Assembly.

CAUTION 2: Electrostatic breakdown of the laser diode in the optical system block may occur as a potential difference caused by electrostatic charge accumulated on cloth, human body etc, during unpacking or repair work.

To avoid damage of pickup follow next procedures.

2-1. Short the three short lands of FPC cable with solder before removing the FFC cable (CN201) from it. If you disconnect the FFC cable (CN201), the laser diode of pickup will be destroyed. (Fig. D4)

2-2. Disconnect Connectors (CN301), (CN401) and (CN601). Remove two Screws (S-3A) and (S-3B) and lift the DVD Main CBA Unit. (Fig. D4)

CAUTION 3: When reassembling, confirm the FFC cable (CN201) is connected completely. Then remove the solder from the three short lands of FPC cable. (Fig. D4)

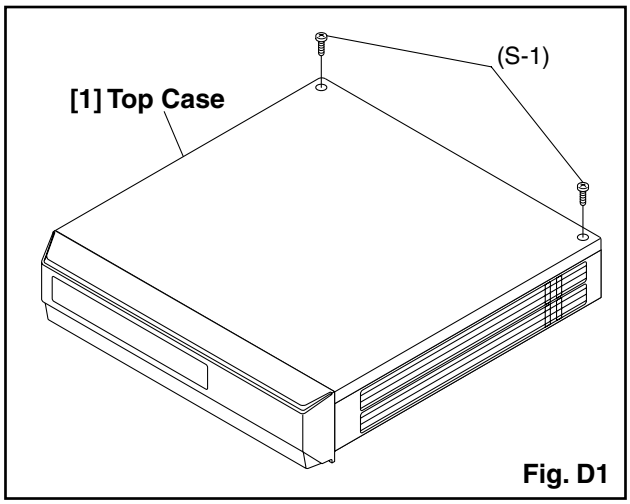


Fig. D1

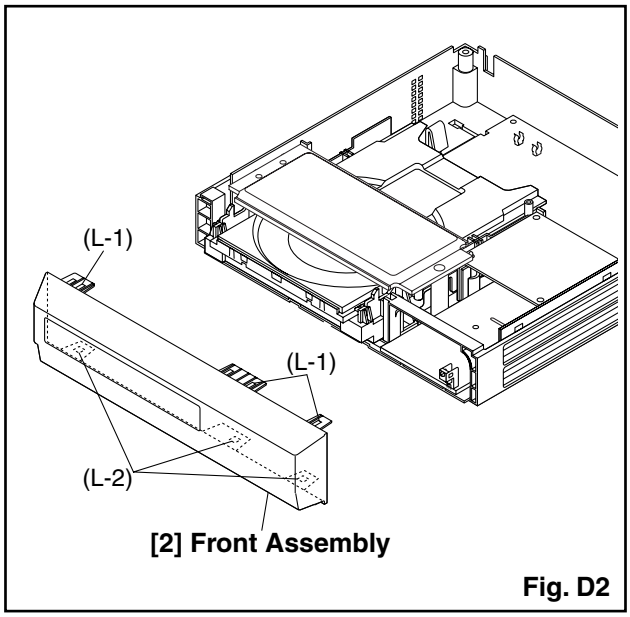


Fig. D2

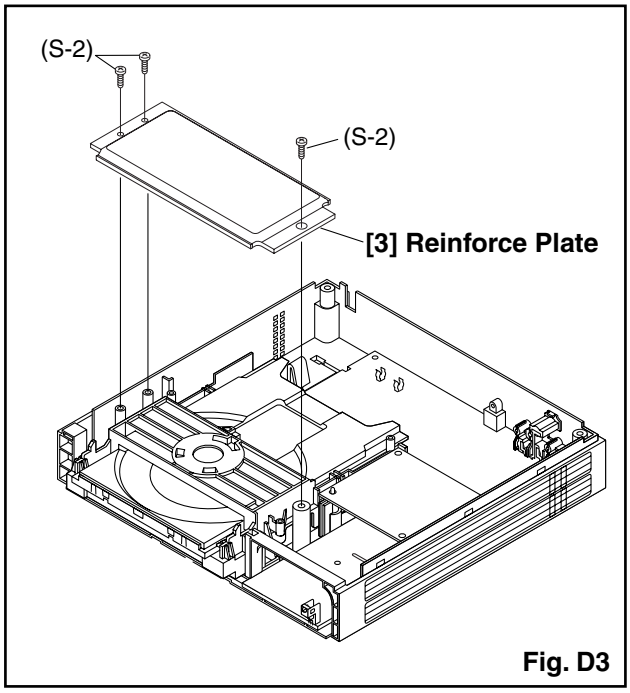


Fig. D3

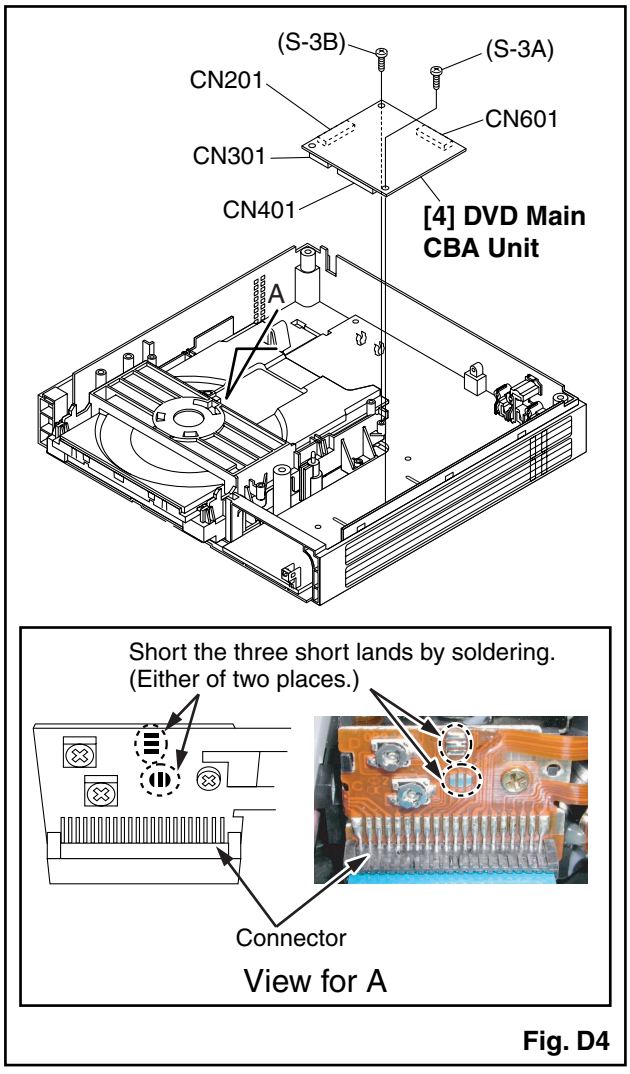


Fig. D4

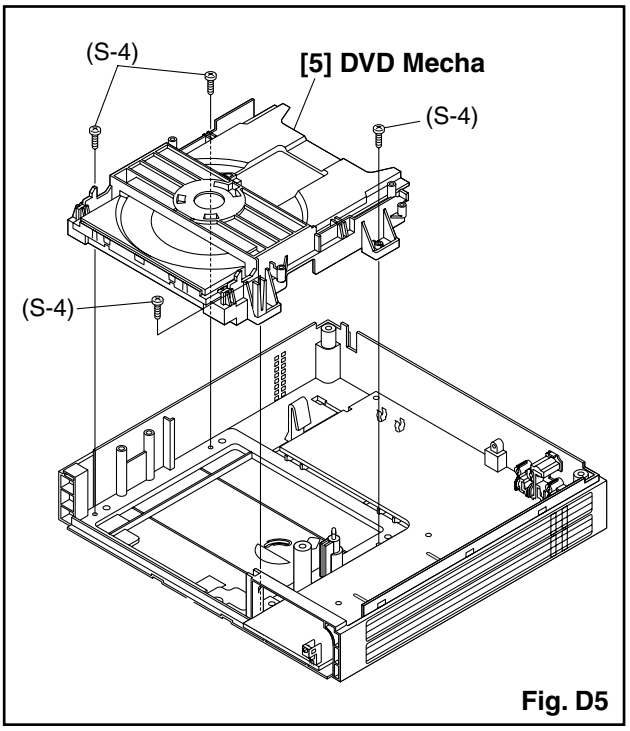


Fig. D5

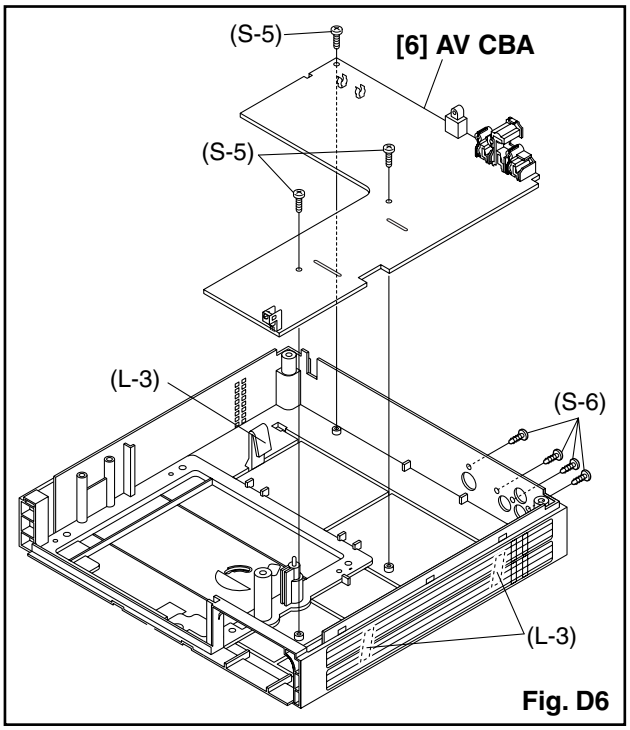
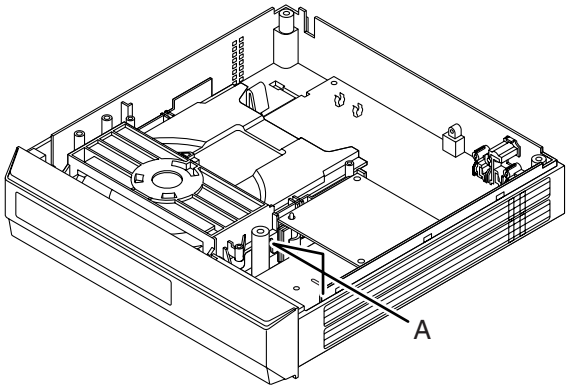
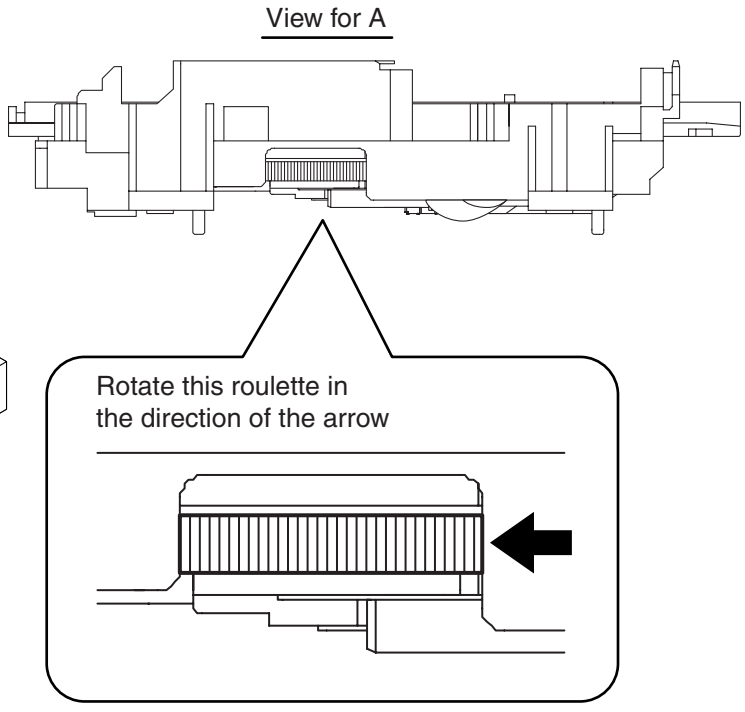


Fig. D6

HOW TO EJECT MANUALLY (Method 1)

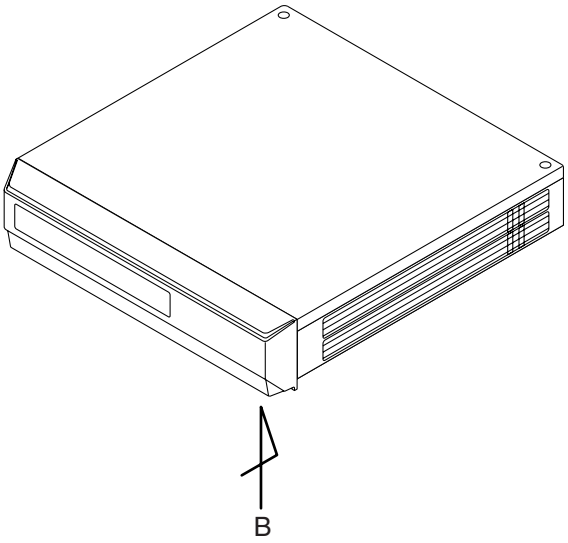
1. Remove the Top Case.
2. Remove the Reinforce Plate.
3. Rotate the roulette in the direction of the arrow as shown below.

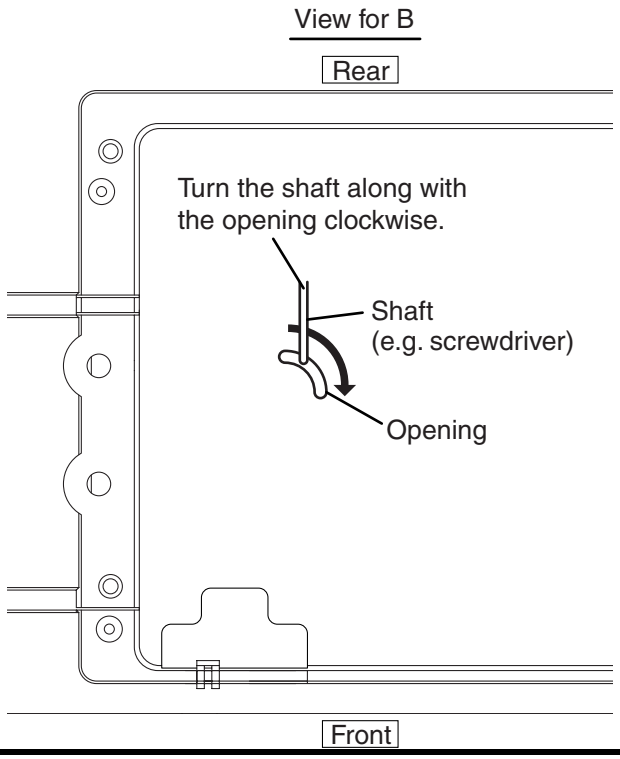




HOW TO EJECT MANUALLY (Method 2)

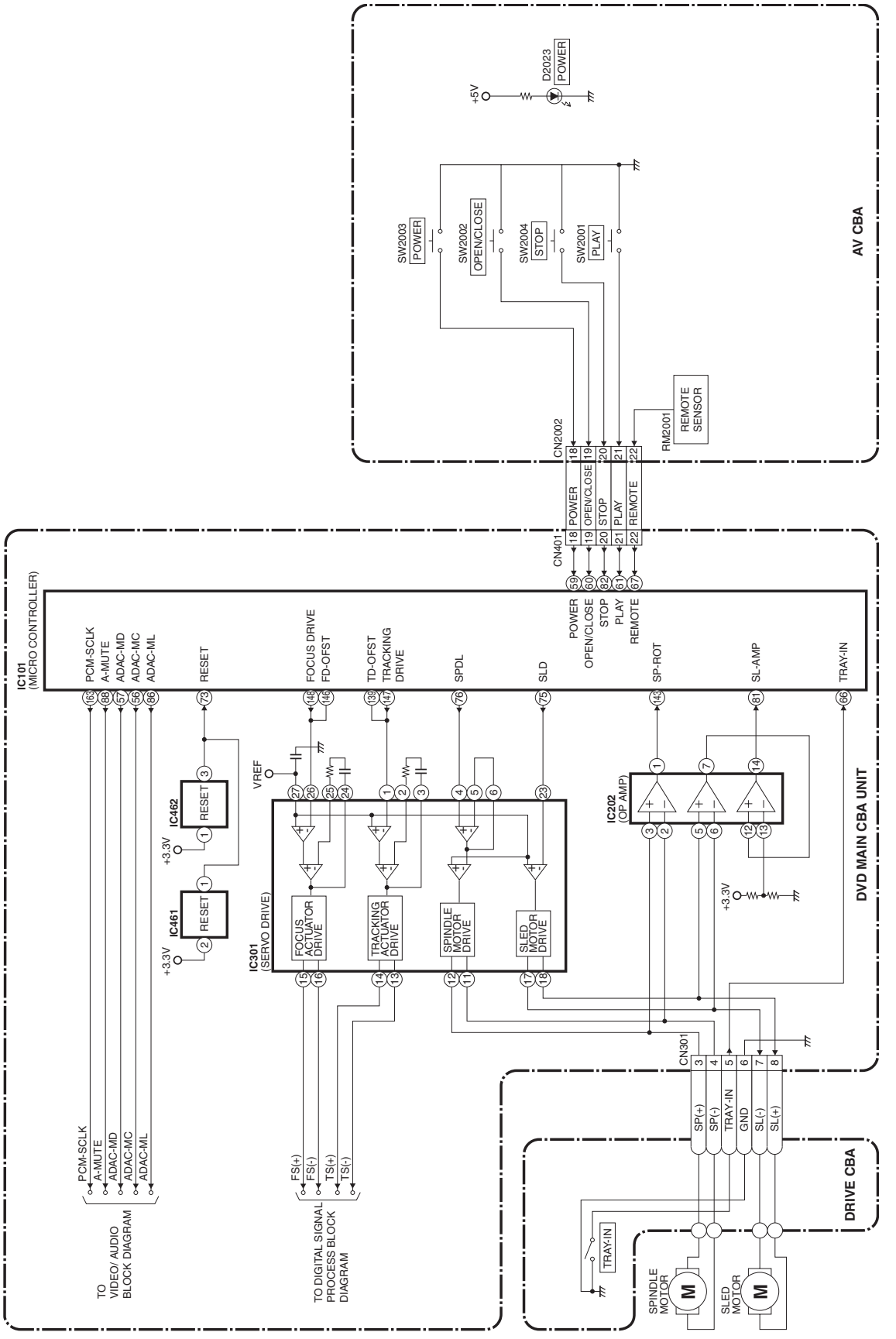
1. Turn the unit over.
2. Insert the shaft less than a diameter of 3 mm (e.g. screwdriver) straightly into the opening as shown.
3. Turn the shaft along with the opening clockwise.
4. Repeat steps 2 and 3 until the tray will open.
5. Pull the tray slowly with a hand.



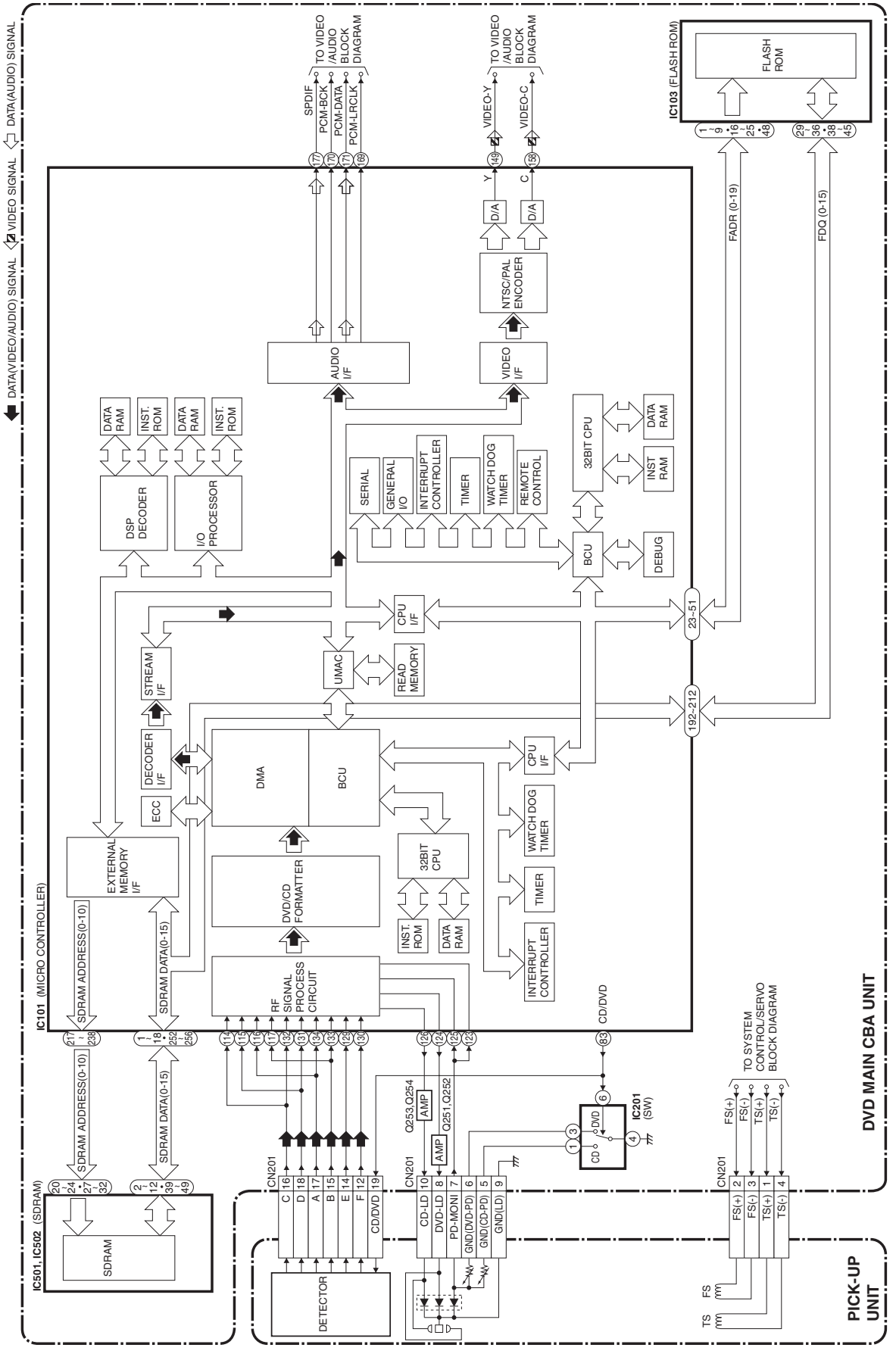


BLOCK DIAGRAMS

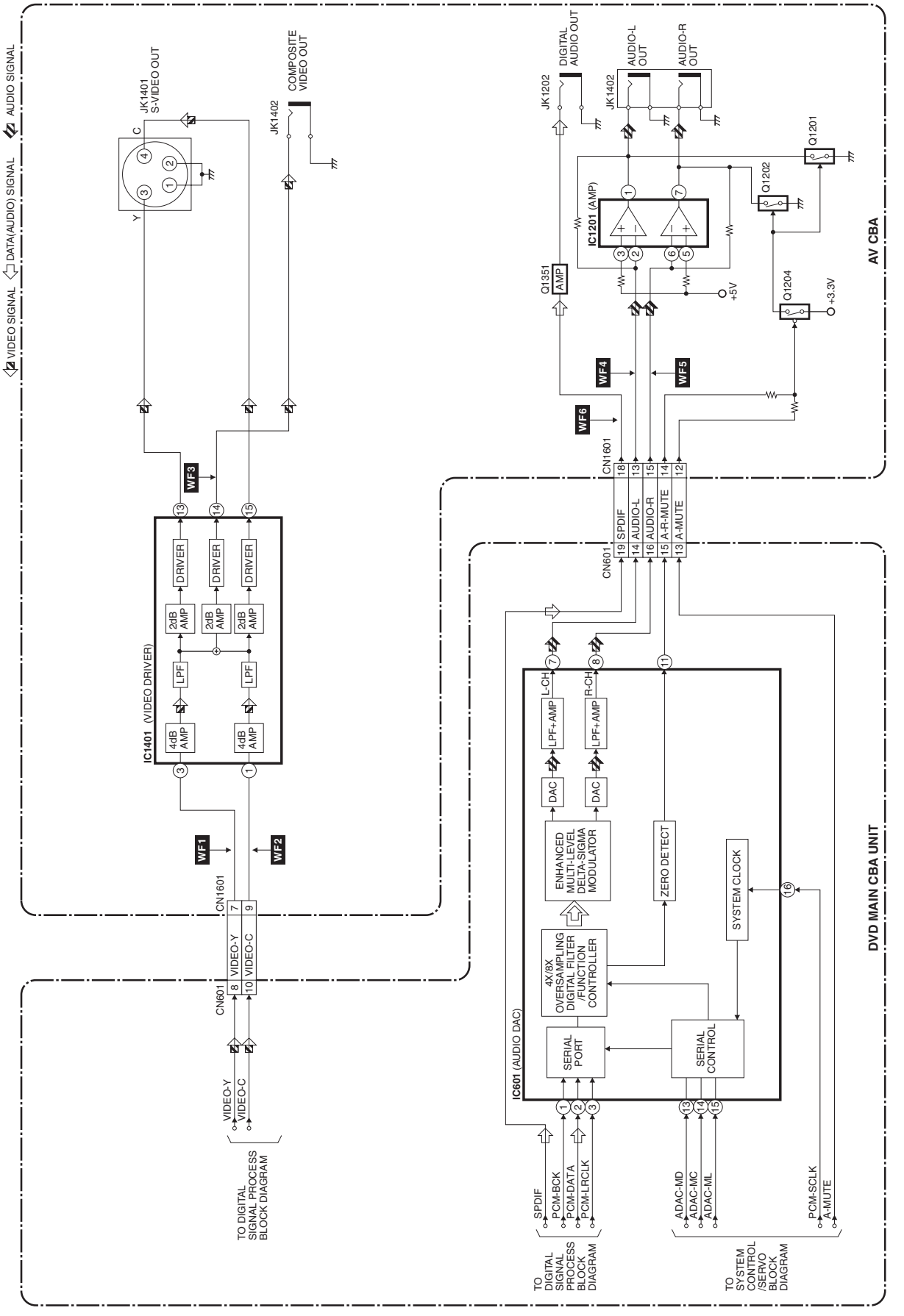
System Control / Servo Block Diagram



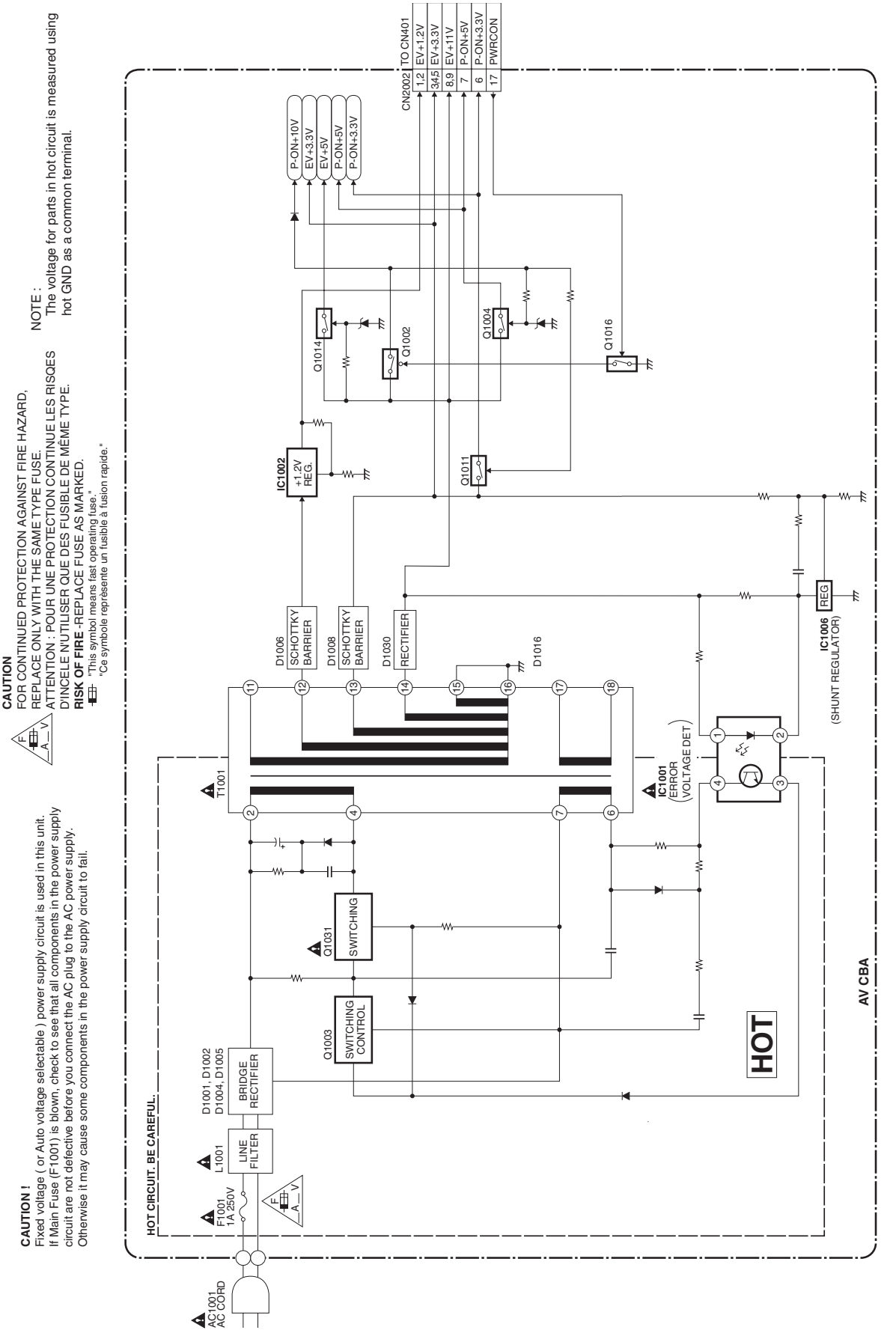
Digital Signal Process Block Diagram



Video / Audio Block Diagram



Power Supply Block Diagram


CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE -REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."
NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.
HOT CIRCUIT. BE CAREFUL.
AV CBA
HOT
AC1001 AC CORD
F1001 1A 250V
L1001 LINE FILTER
D1001, D1002 D1004, D1005 BRIDGE RECTIFIER
Q1003 SWITCHING CONTROL
Q1031 SWITCHING
T1001
IC1001 (ERROR VOLTAGE DET)
IC1006 (SHUNT REGULATOR) REG
D1006 SCHOTTKY BARRIER
D1008 SCHOTTKY BARRIER
D1030 RECTIFIER
D1016
IC1002 +1.2V REG.
Q1011
Q1014
Q1002
Q1004
Q1016
P-ON+10V
EV+3.3V
EV+5V
P-ON+5V
P-ON+3.3V
CN2002
TO CN401
1,2 EV+1.2V
3,4,5 EV+3.3V
8,9 EV+11V
7 P-ON+5V
6 P-ON+3.3V
17 PWRCON

SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

WARNING

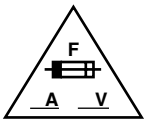
Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Notes:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in μF ($P=10^{-6}$ μF).
5. All voltages are DC voltages unless otherwise specified.

LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. CAUTION:



FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQES D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.

This symbol means fast operating fuse.
Ce symbole reprèsente un fusible à fusion rapide.

2. CAUTION:

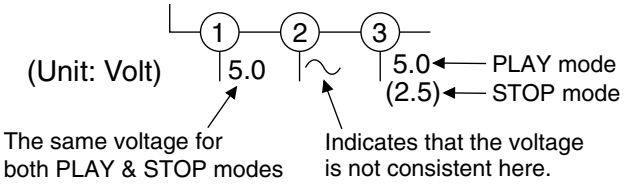
Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. Note:

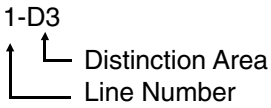
(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.

(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Voltage indications for PLAY and STOP mode on the schematics are as shown below:

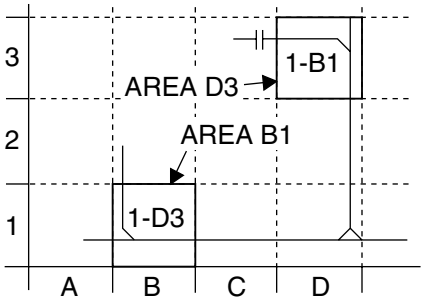


5. How to read converged lines



Examples:

1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



6. Test Point Information

: Indicates a test point with a jumper wire across a hole in the PCB.

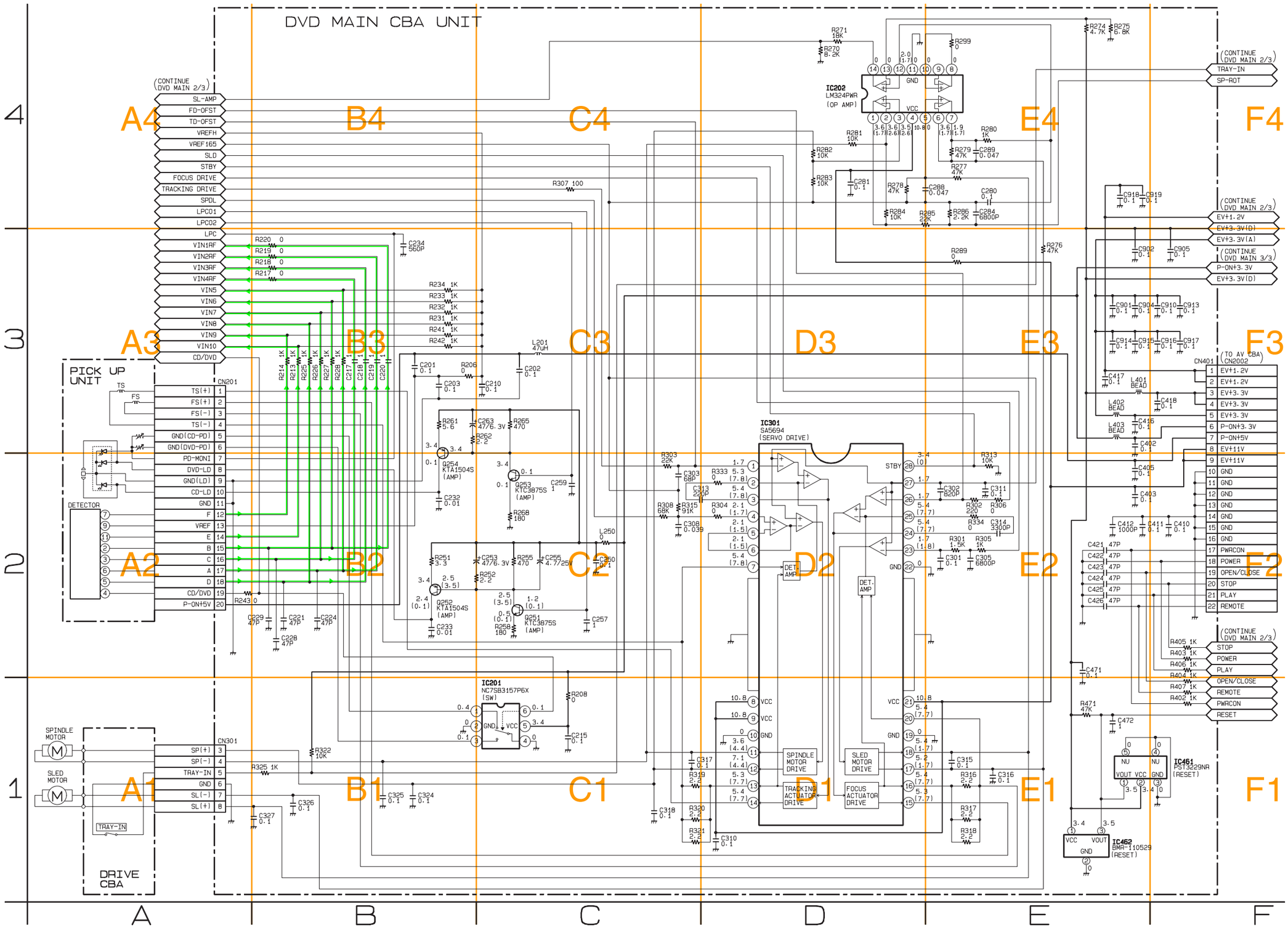
: Used to indicate a test point with a component lead on foil side.

: Used to indicate a test point with no test pin.

: Used to indicate a test point with a test pin.

DVD Main 1/3 Schematic Diagram

DATA(VIDEO+AUDIO)



DVD MAIN 1/3

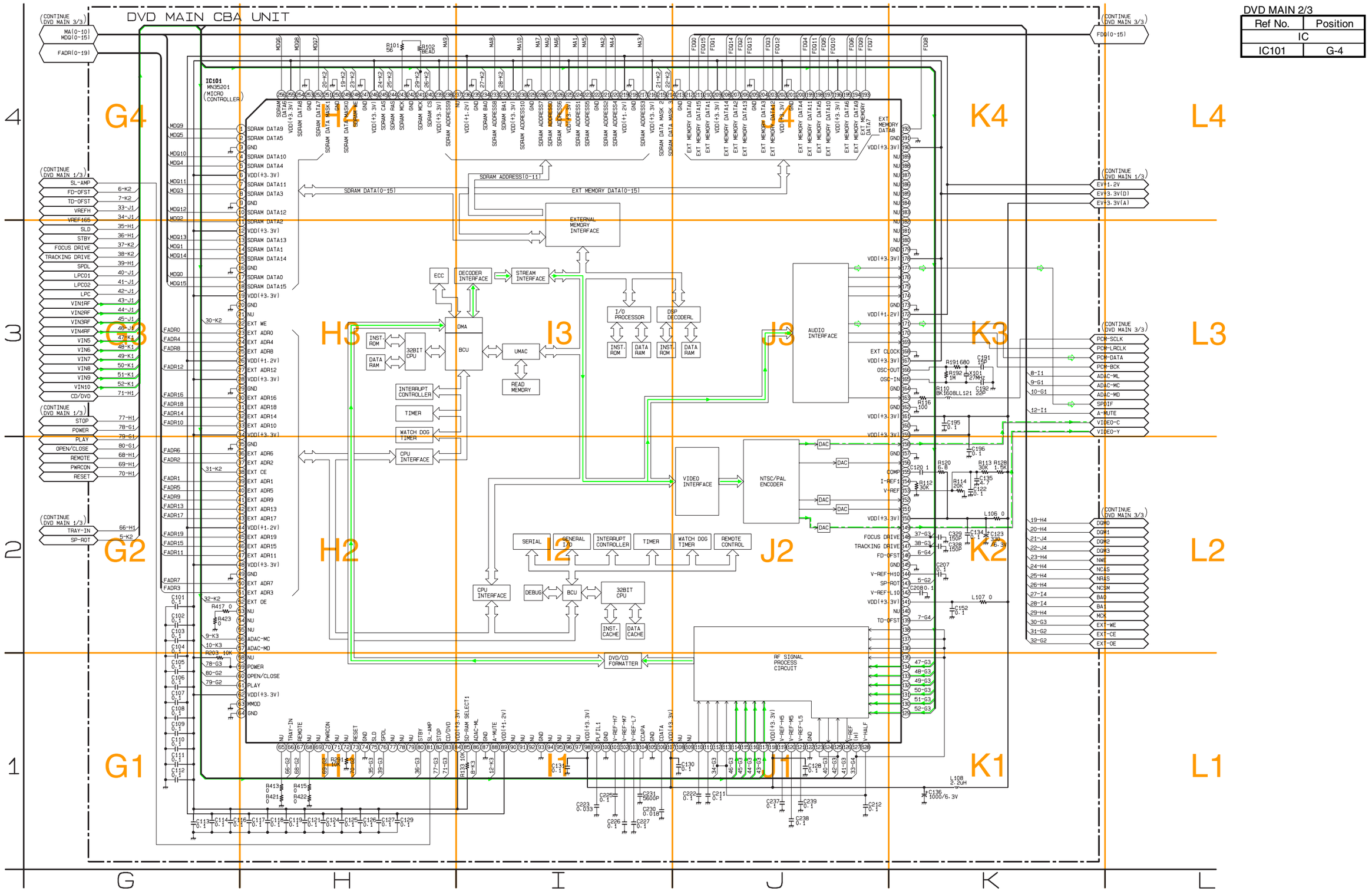
Ref No.	Position
ICS	
IC201	C-1
IC202	D-4
IC301	D-3
IC461	F-1
IC462	E-1
TRANSISTORS	
Q251	C-2
Q252	B-2
Q253	C-2
Q254	B-2
CONNECTORS	
CN201	A-3
CN301	A-1
CN401	F-3

DVD Main 2/3 Schematic Diagram

DATA(VIDEO+AUDIO)
VIDEO SIGNAL
DATA (AUDIO)

DVD MAIN 2/3

Ref No.	Position
IC	
IC101	G-4



IC101 VOLTAGE CHART

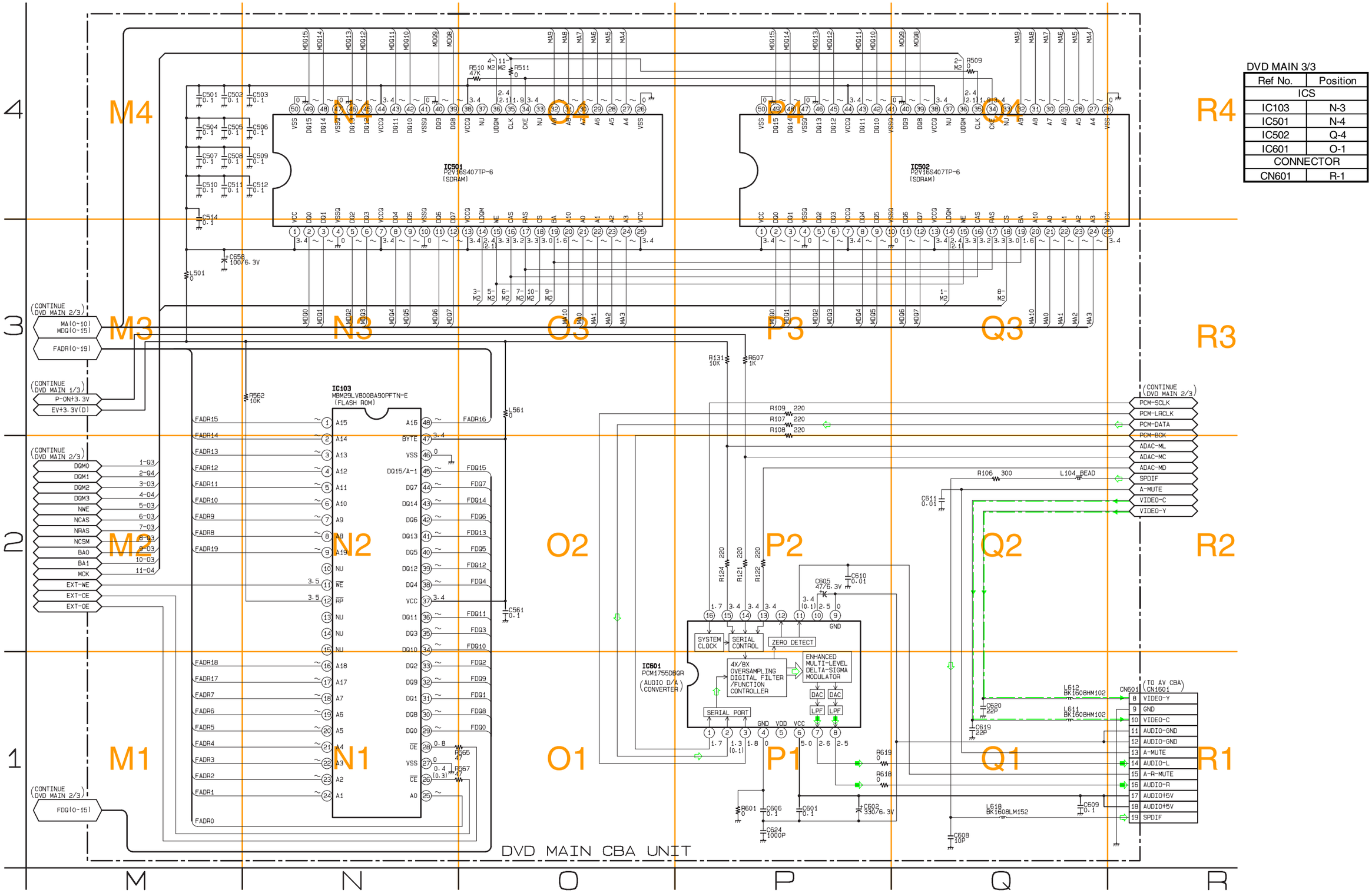
PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP	PIN.NO	PLAY	STOP
1	~	~	33	~	~	65	0	0	97	-----	-----	129	2.3	2.3	161	3.4	3.4	193	~	~	225	3.4	3.4
2	~	~	34	3.4	3.4	66	3.4	3.5	98	3.4	3.4	130	2.3	2.3	162	0	0	194	~	~	226	~	~
3	0	0	35	0	0	67	3.2	3.2	99	0.9	0.8	131	2.3	2.3	163	1.8	1.8	195	~	~	227	~	~
4	~	~	36	~	~	68	0	0	100	0	0	132	2.4	2.3	164	0	0	196	3.4	3.4	228	~	~
5	~	~	37	~	~	69	-----	-----	101	2.4	2.4	133	2.4	2.4	165	1.7	1.8	197	~	~	229	0	0
6	3.4	3.4	38	0.4	0.3	70	3.4	3.4	102	2.2	2.2	134	2.4	2.4	166	1.7	1.7	198	~	~	230	~	~
7	~	~	39	~	~	71	-----	-----	103	1.9	1.9	135	2.3	2.3	167	3.4	3.4	199	~	~	231	3.4	3.4
8	~	~	40	~	~	72	1.4	2.7	104	0.4	0.3	136	2.3	2.3	168	0	0	200	~	~	232	1.3	1.6
9	0	0	41	~	~	73	3.4	3.4	105	0	0	137	2.3	2.3	169	1.8	1.8	201	0	0	233	~	~
10	~	~	42	~	~	74	0	0	106	1.7	1.7	138	2.3	2.3	170	1.7	1.7	202	3.4	3.4	234	1.9	2.3
11	~	~	43	~	~	75	1.7	1.8	107	3.4	3.4	139	1.7	1.7	171	1.3	0.1	203	~	~	235	0	0
12	3.4	3.4	44	1.3	1.3	76	2.3	1.8	108	-----	-----	140	-----	-----	172	1.3	1.3	204	~	~	236	1.3	1.3
13	~	~	45	~	~	77	-----	-----	109	-----	-----	141	3.4	3.4	173	0	0	205	0	0	237	~	~
14	~	~	46	~	~	78	-----	-----	110	1.9	1.9	142	1.3	1.3	174	-----	-----	206	~	~	238	~	~
15	~	~	47	~	~	79	-----	-----	111	1.9	1.9	143	2.1	1.7	175	-----	-----	207	~	~	239	3.4	3.4
16	0	0	48	3.4	3.4	80	3.4	0.1	112	1.7	1.7	144	2.2	2.2	176	-----	-----	208	~	~	240	3.4	3.3
17	~	~	49	0	0	81	0.1	0.1	113	1.7	1.7	145	0	0	177	1.8	1.7	209	3.4	3.4	241	1.9	1.9
18	~	~	50	~	~	82	2.8	2.8	114	1.7	1.7	146	1.7	1.7	178	3.4	3.5	210	~	~	242	0	0
19	3.4	3.4	51	~	~	83	0.1	0.1	115	1.7	1.7	147	1.8	1.7	179	0	0	211	~	~	243	1.9	1.9
20	0	0	52	0.8	0.8	84	3.4	3.4	116	1.7	1.7	148	1.7	1.7	180	-----	-----	212	~	~	244	3.4	3.3
21	0.9	0.1	53	0	0	85	0.1	0.1	117	1.7	1.7	149	0.6	0.5	181	-----	-----	213	0	0	245	3.4	3.4
22	3.5	3.5	54	-----	-----	86	3.6	3.4	118	3.4	3.4	150	3.4	3.4	182	-----	-----	214	2.5	3.0	246	3.4	3.4
23	~	~	55	-----	-----	87	0	0	119	2.0	2.0	151	-----	-----	183	3.5	3.5	215	2.5	3.0	247	0	0
24	~	~	56	3.4	3.4	88	3.5	0.1	120	1.7	1.7	152	-----	-----	184	-----	-----	216	3.4	3.4	248	3.3	3.4
25	~	~	57	3.5	3.5	89	1.3	1.3	121	1.5	1.5	153	1.4	1.3	185	-----	-----	217	~	~	249	3.2	3
26	1.3	1.3	58	-----	-----	90	-----	-----	122	0	0	154	1.4	1.3	186	-----	-----	218	0	0	250	0	0
27	~	~	59	3.4	3.4	91	-----	-----	123	0.3	0.1	155	2.4	2.4	187	-----	-----	219	1.3	1.3	251	3.2	3.0
28	3.4	3.4	60	3.4	3.4	92	-----	-----	124	1.2	0.1	156	-----	-----	188	-----	-----	220	~	~	252	~	~
29	0	0	61	3.5	3.5	93	0	0	125	0.3	0.1	157	0	0	189	-----	-----	221	~	~	253	0	0
30	~	~	62	3.4	3.4	94	-----	-----	126	0.1	0.1	158	0.9	0.9	190	3.4	3.5	222	0	0	254	~	~
31	~	~	63	0	0	95	-----	-----	127	2.3	2.3	159	3.4	3.4	191	0	0	223	~	~	255	3.4	3.4
32	~	~	64	0	0	96	-----	-----	128	1.7	1.7	160	0	0	192	~	~	224	~	~	256	~	~

DVD Main 3/3 Schematic Diagram

VIDEO SIGNAL　DATA (AUDIO)　AUDIO SIGNAL

DVD MAIN 3/3

Ref No.	Position
ICS	
IC103	N-3
IC501	N-4
IC502	Q-4
IC601	O-1
CONNECTOR	
CN601	R-1

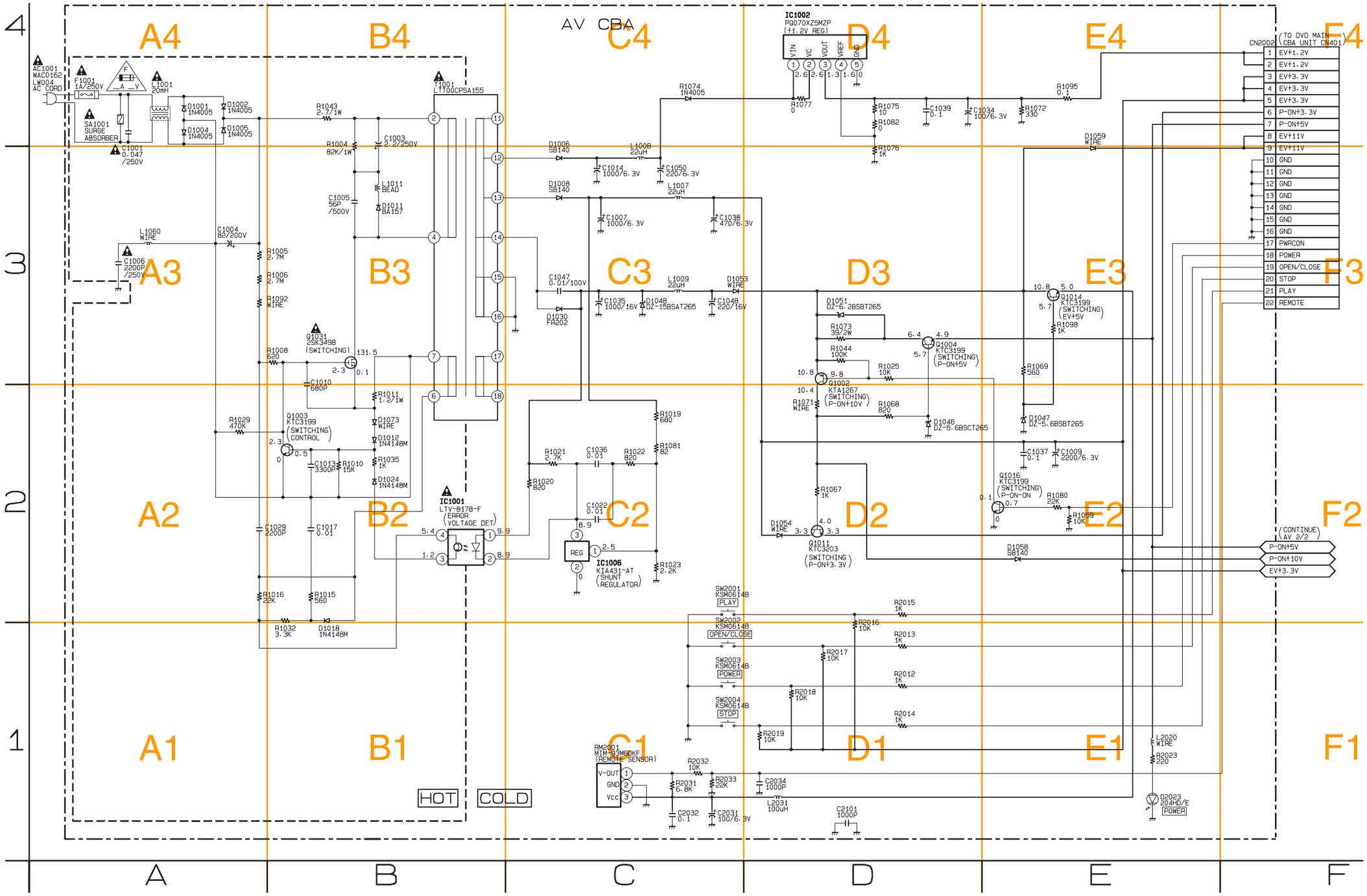


AV 1/2 Schematic Diagram

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

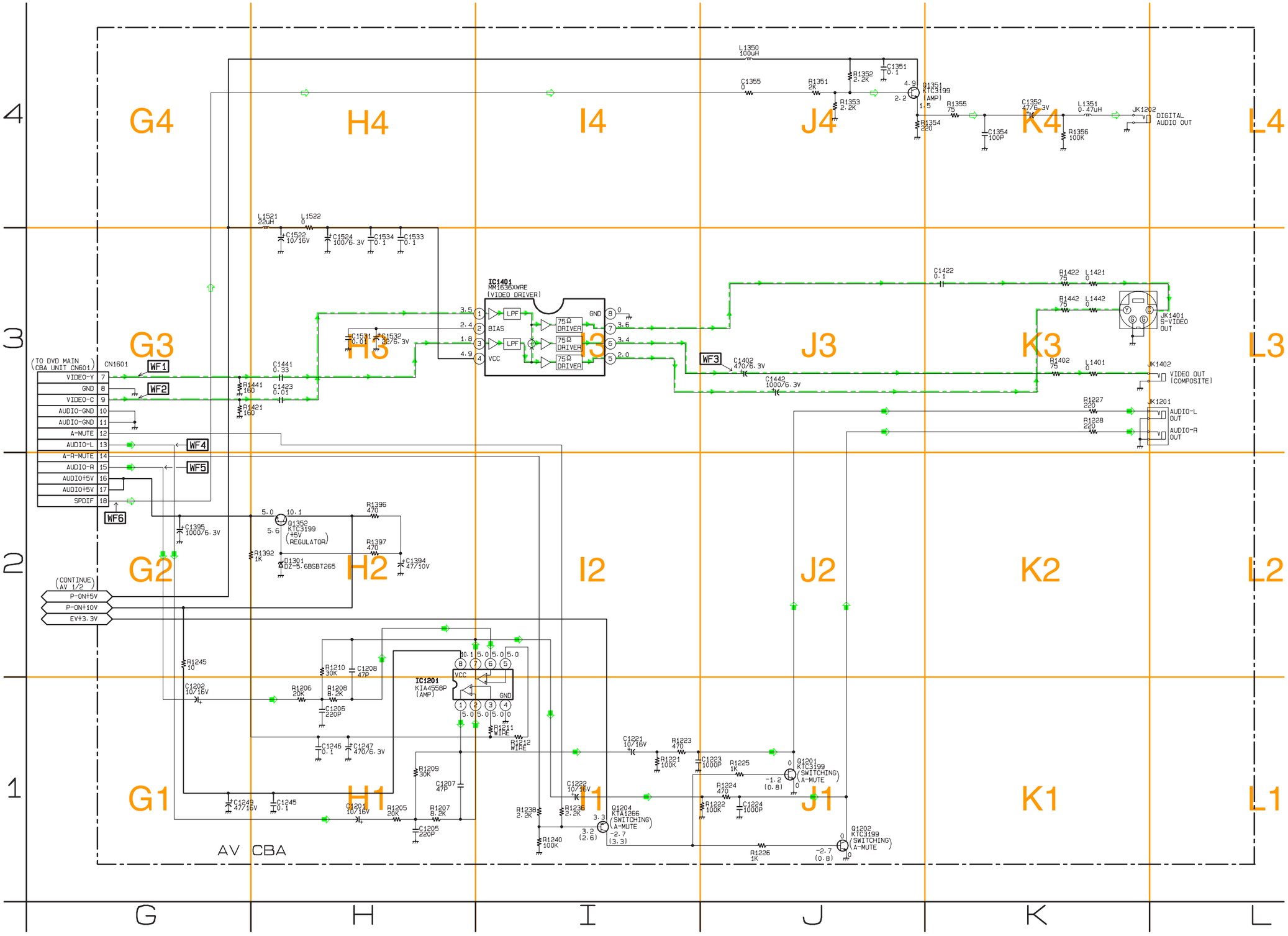


AV 1/2

Ref No.	Position
ICS	
IC1001	B-2
IC1002	D-4
IC1006	C-2
TRANSISTORS	
Q1002	D-3
Q1003	B-2
Q1004	D-3
Q1011	D-2
Q1014	E-3
Q1016	E-2
Q1031	B-3
CONNECTOR	
CN2002	F-4

AV 2/2 Schematic Diagram

VIDEO SIGNAL　DATA (AUDIO)　AUDIO SIGNAL



AV 2/2

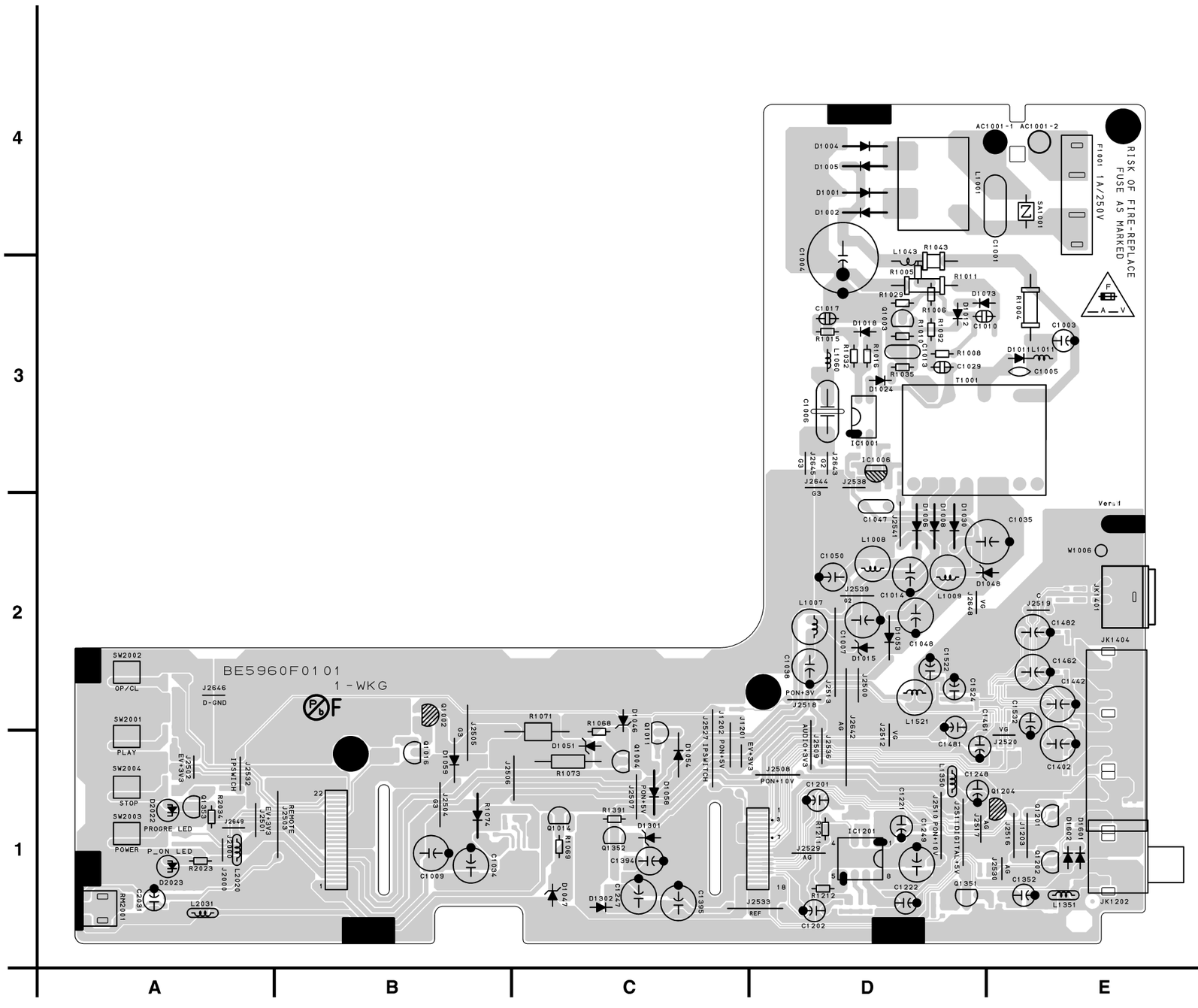
Ref No.	Position
ICS	
IC1201	H-1
IC1401	I-3
TRANSISTORS	
Q1201	J-1
Q1202	J-1
Q1204	I-1
Q1351	K-4
Q1352	H-2
CONNECTOR	
CN1601	G-3

AV CBA Top View

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole reprèsente un fusible à fusion rapide."

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

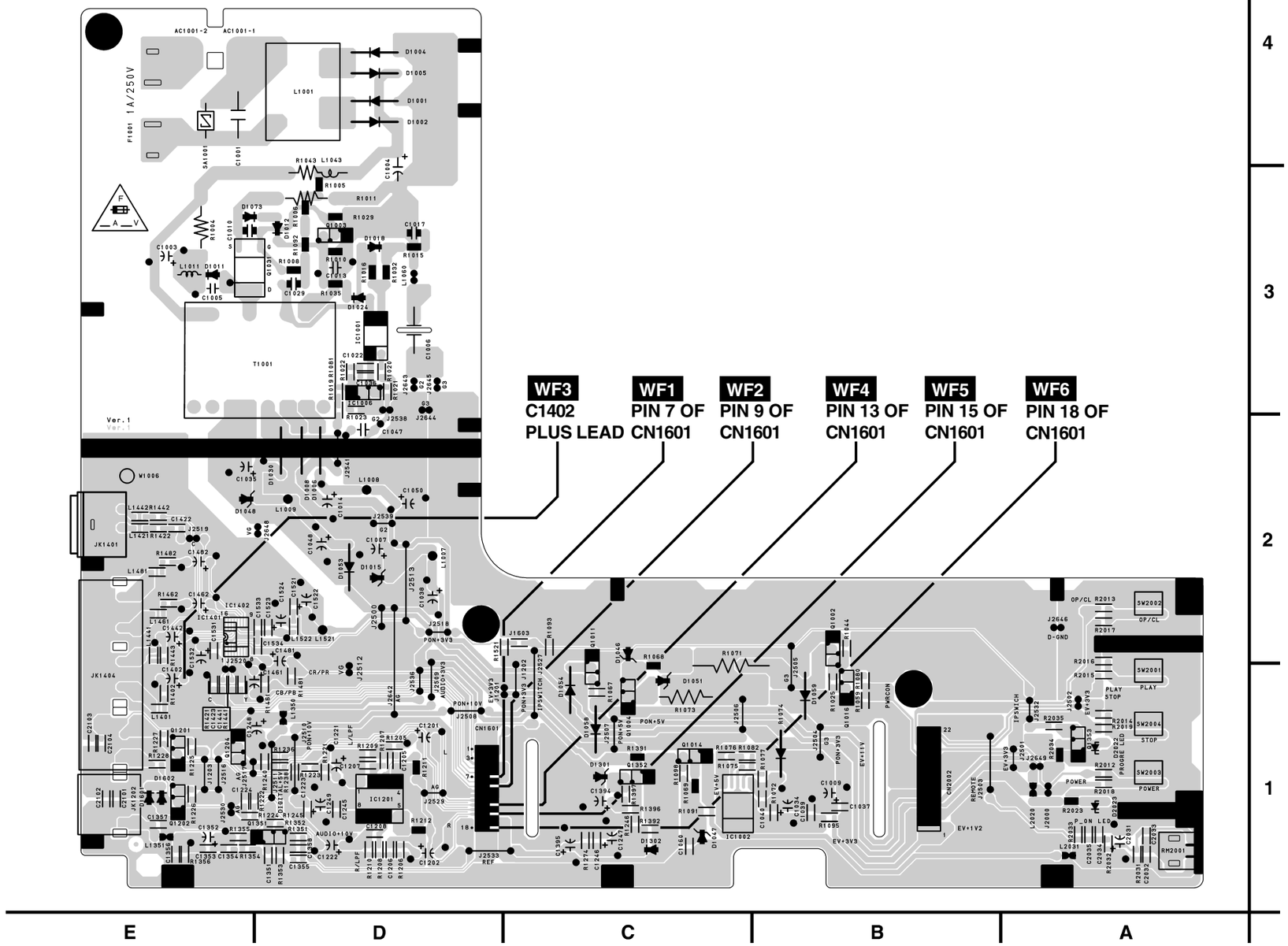


AV CBA Bottom View

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F1001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.
ATTENTION : POUR UNE PROTECTION CONTINUE LES RISQES
D'INCELE N'UTILISER QUE DES FUSIBLE DE MÊME TYPE.
RISK OF FIRE-REPLACE FUSE AS MARKED.
"This symbol means fast operating fuse."
"Ce symbole représente un fusible à fusion rapide."

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

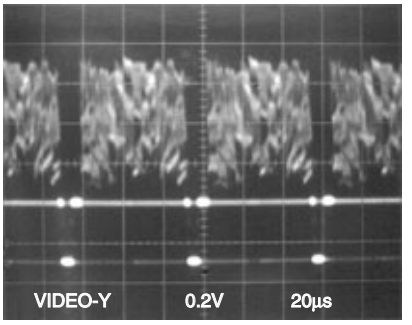


AV CBA

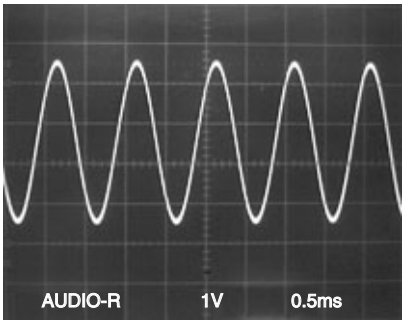
Ref No.	Position
ICS	
IC1001	D-3
IC1002	C-1
IC1006	D-3
IC1201	D-1
IC1401	E-2
TRANSISTORS	
Q1002	B-2
Q1003	D-3
Q1004	C-1
Q1011	C-2
Q1014	C-1
Q1016	B-1
Q1031	D-3
Q1201	E-1
Q1202	E-1
Q1204	E-1
Q1351	E-1
Q1352	C-1
CONNECTORS	
CN1601	D-1
CN2002	B-1

WAVEFORMS

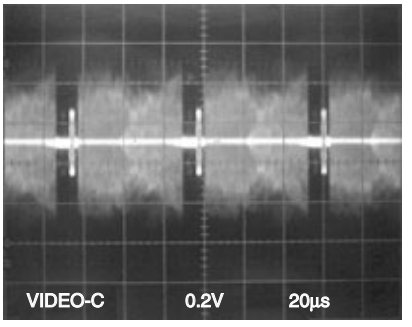
WF1 Pin 7 of CN1601



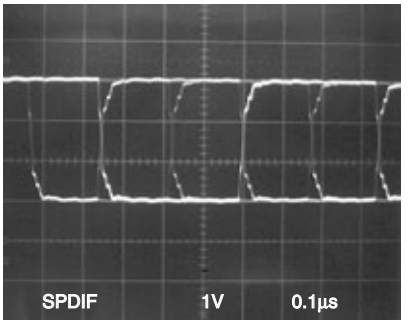
WF5 Pin 15 of CN1601



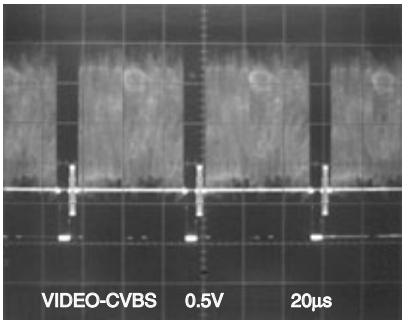
WF2 Pin 9 of CN1601



WF6 Pin 18 of CN1601

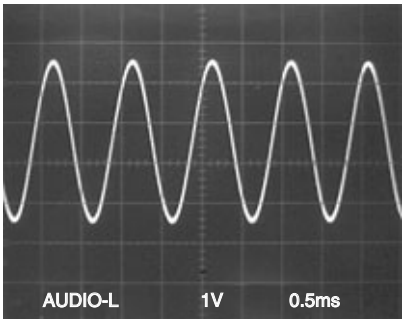


WF3 C1402 PLUS LEAD

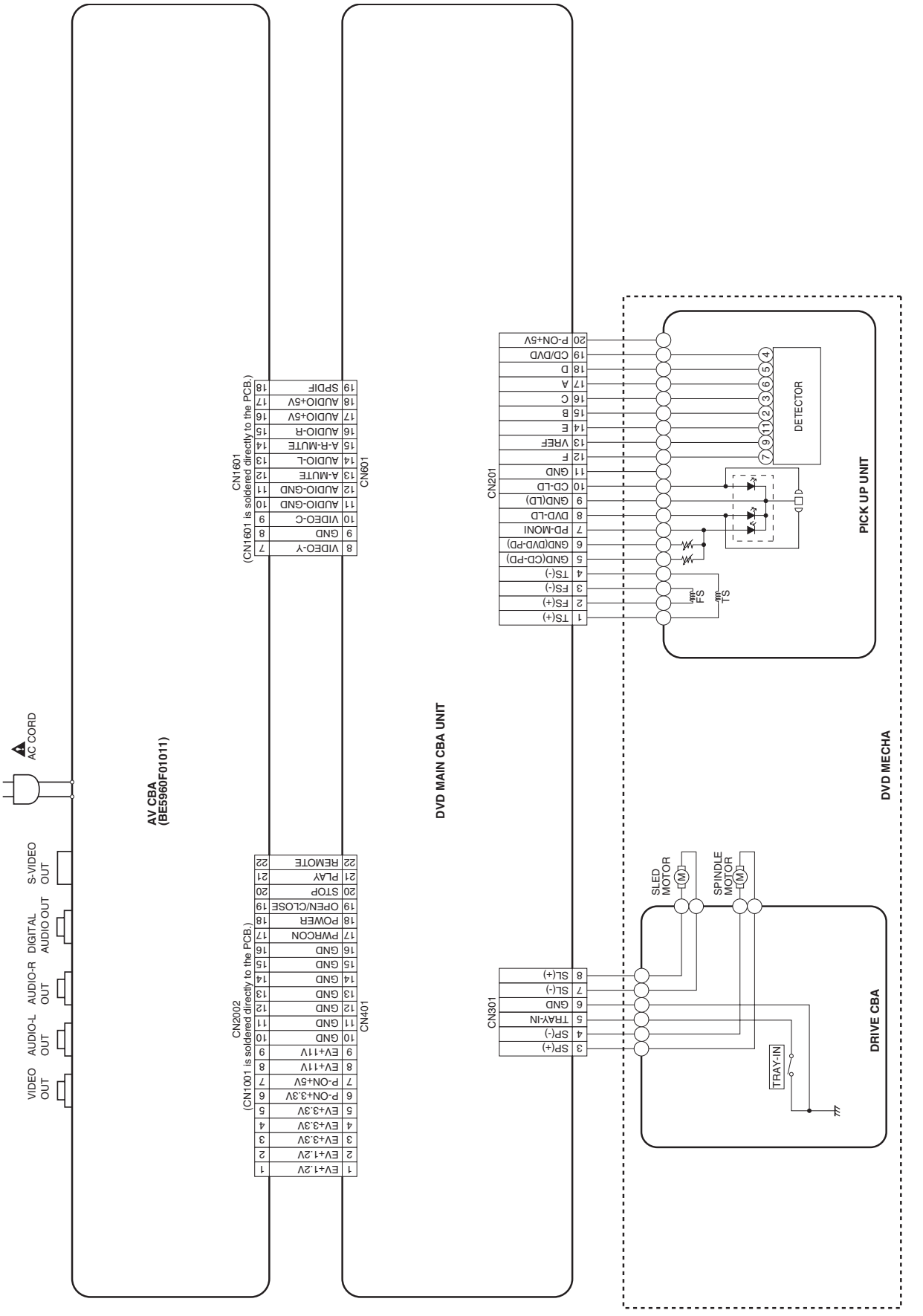


NOTE:
Input
CD: 1kHz PLAY
(WF4~WF6)
DVD: POWER ON (STOP) MODE
(WF1~WF3)

WF4 Pin 13 of CN1601



WIRING DIAGRAM



FIRMWARE RENEWAL MODE

1. Turn the power on and remove the disc on the tray.
2. To put the DVD player into version up mode, press [9], [8], [7], [6], and [SEARCH MODE] buttons on the remote control unit in that order. The tray will open automatically.
   Fig. a appears on the screen.

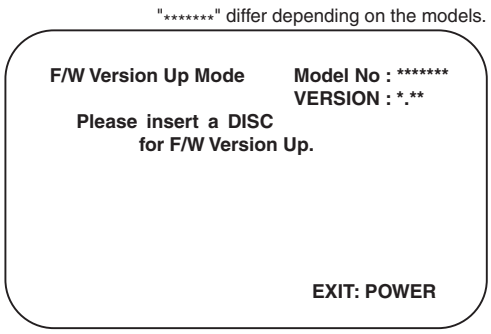


Fig. a Version Up Mode Screen

   The DVD player can also enter the version up mode with the tray open. In this case, Fig. a will be shown on the screen while the tray is open.

3. Load the disc for version up.
4. The DVD player enters the F/W version up mode automatically. Fig. c appears on the screen. If you enter the F/W for different models, “Disc Error” will appear on the screen, then the tray will open automatically.

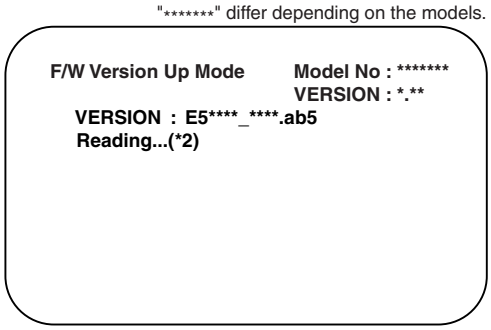


Fig. c Programming Mode Screen

   The appearance shown in (*2) of Fig. c is described as follows:

No.	Appearance	State
1	Reading...	Sending files into the memory
2	Erasing...	Erasing previous version data
3	Programming...	Writing new version data

5. After programming is finished, the tray opens automatically. Fig. e appears on the screen and the checksum in (*3) of Fig. e.

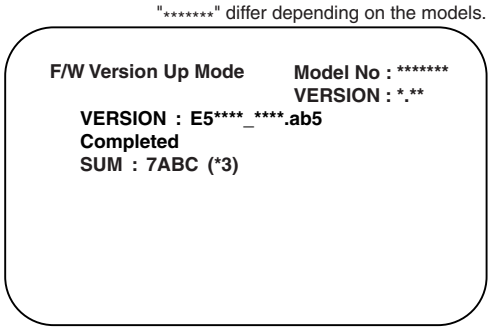


Fig. e Completed Program Mode Screen

   At this time, no buttons are available.

6. Remove the disc on the tray.
7. Unplug the AC cord from the AC outlet. Then plug it again.
8. Turn the power on by pressing the [POWER] button and the tray will close.
9. Press [1], [2], [3], [4], and [DISPLAY] buttons on the remote control unit in that order.
   Fig. g appears on the screen.

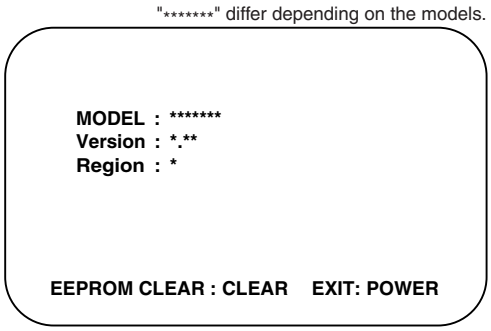


Fig. g

10. Press [CLEAR] button on the remote control unit.
    Fig. h appears on the screen.

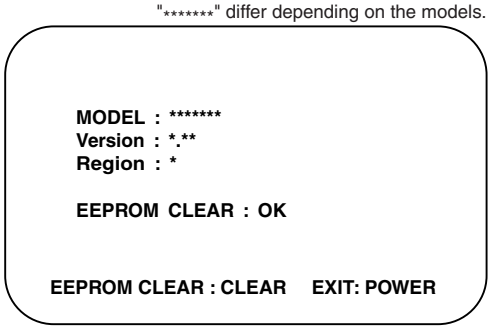


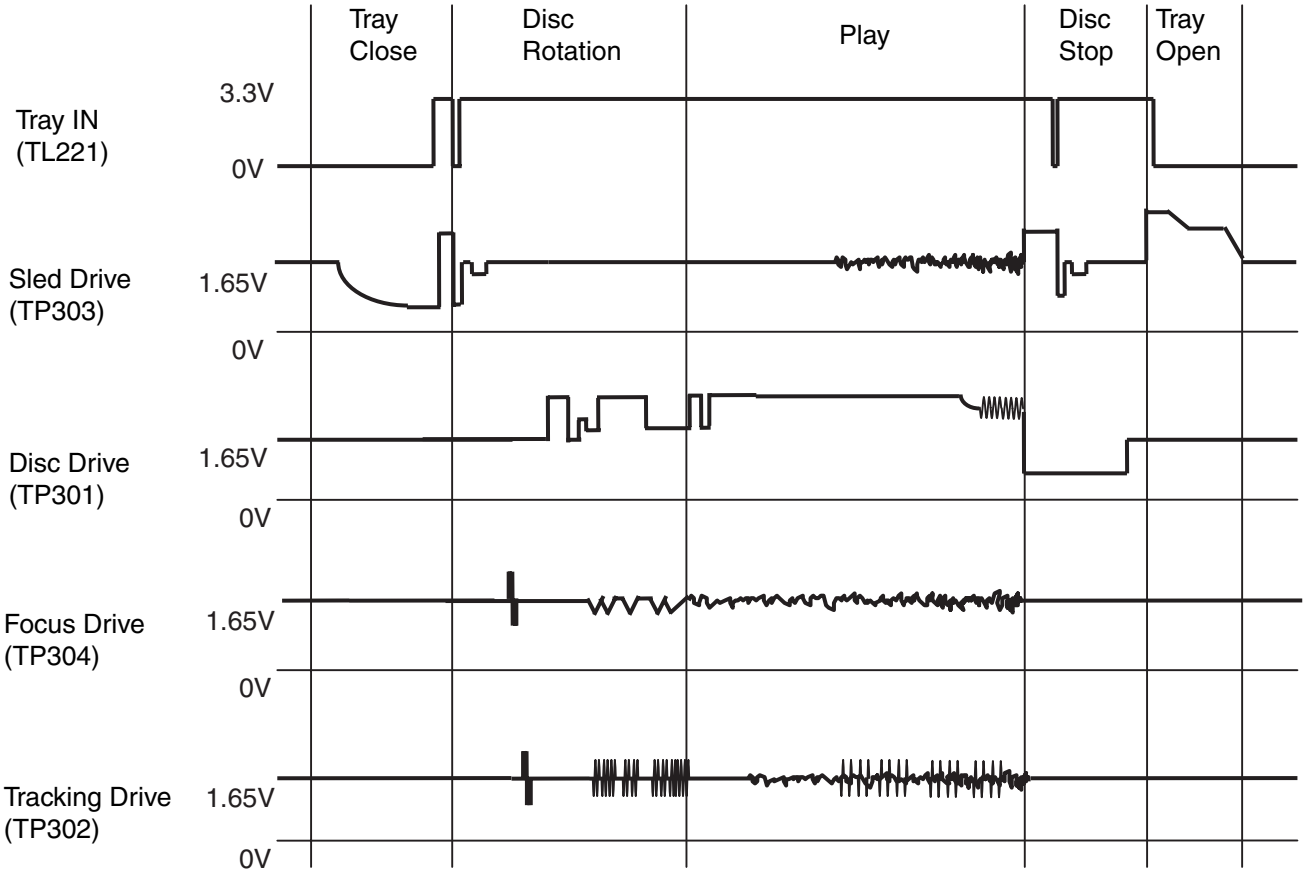
Fig. h

    When “OK” appears on the screen, the factory default will be set. Then the firmware renewal mode is complete.

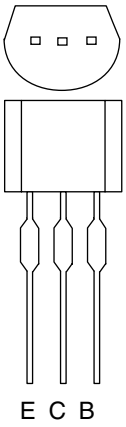
11. To exit this mode, press [POWER] button.

SYSTEM CONTROL TIMING CHARTS

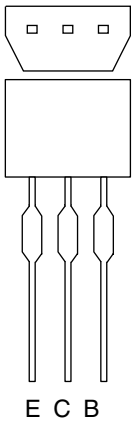
Tray Close ~ Play / Play ~ Tray Open



LEAD IDENTIFICATIONS

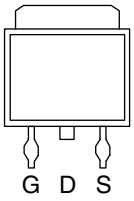


2SA1015-Y(TPE2)
2SC1815-Y(TPE2)
2SC2120-Y(TPE2)
KTA1266(Y)
KTC3203(Y)

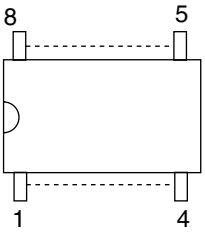


2SC2785(H)
BA1L3M-T
KRC101M
KTA1267(Y)
KTC3199(GR,Y)

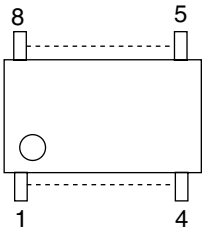
2SK3498



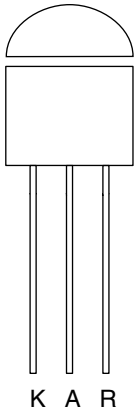
KIA4558P



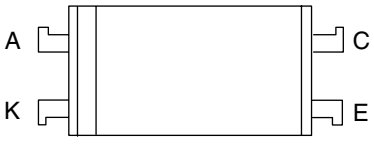
NJM4558D
MM1636XWRE



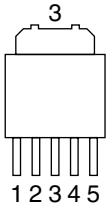
FAN431AZXA
KIA431-AT



LTV-817B-F
LTV-817C-F
PS2561A-1(Q,W)



PQ070XZ5MZP

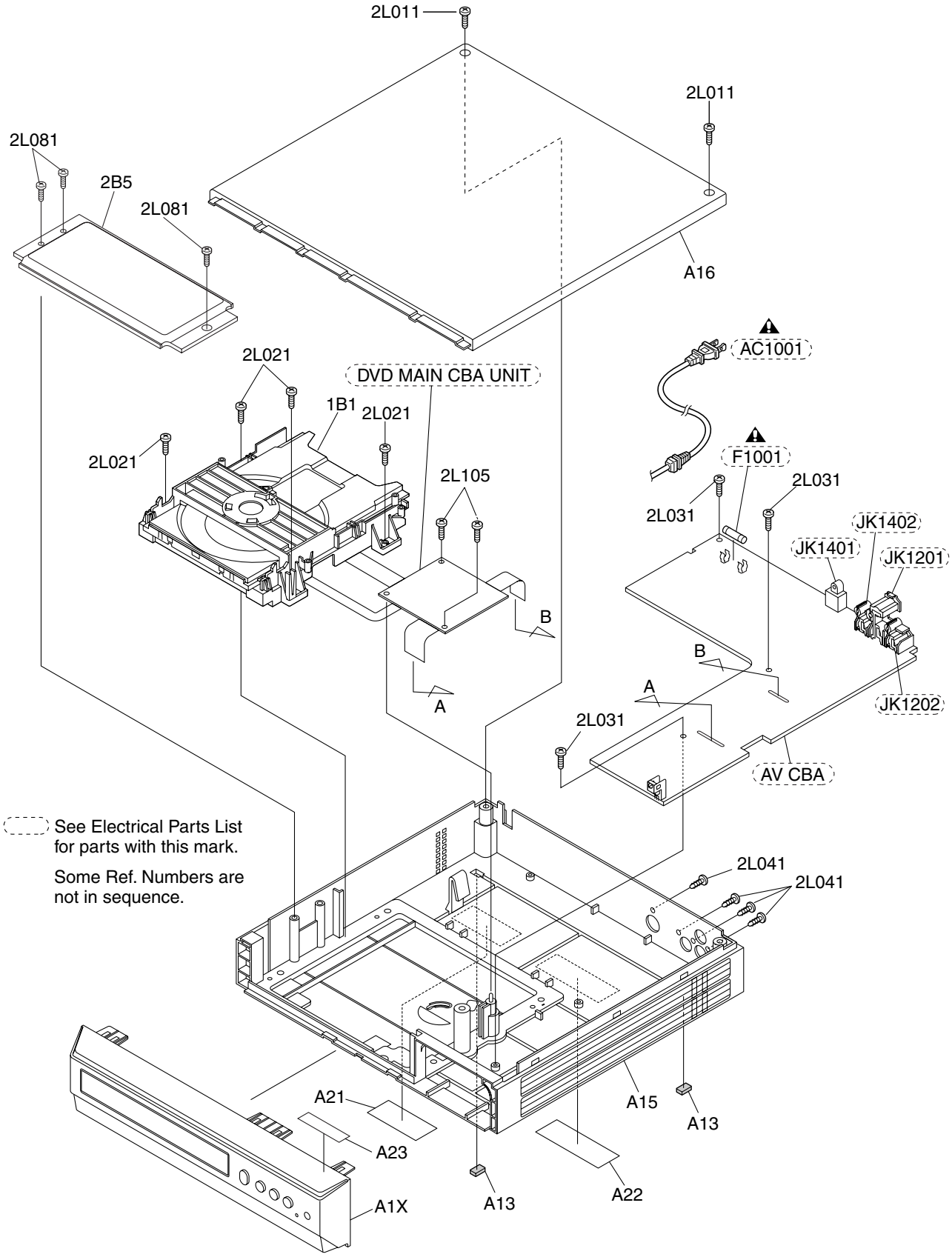


1: Vin
2: Vc
3: Vo
4: Vadj
5: GND

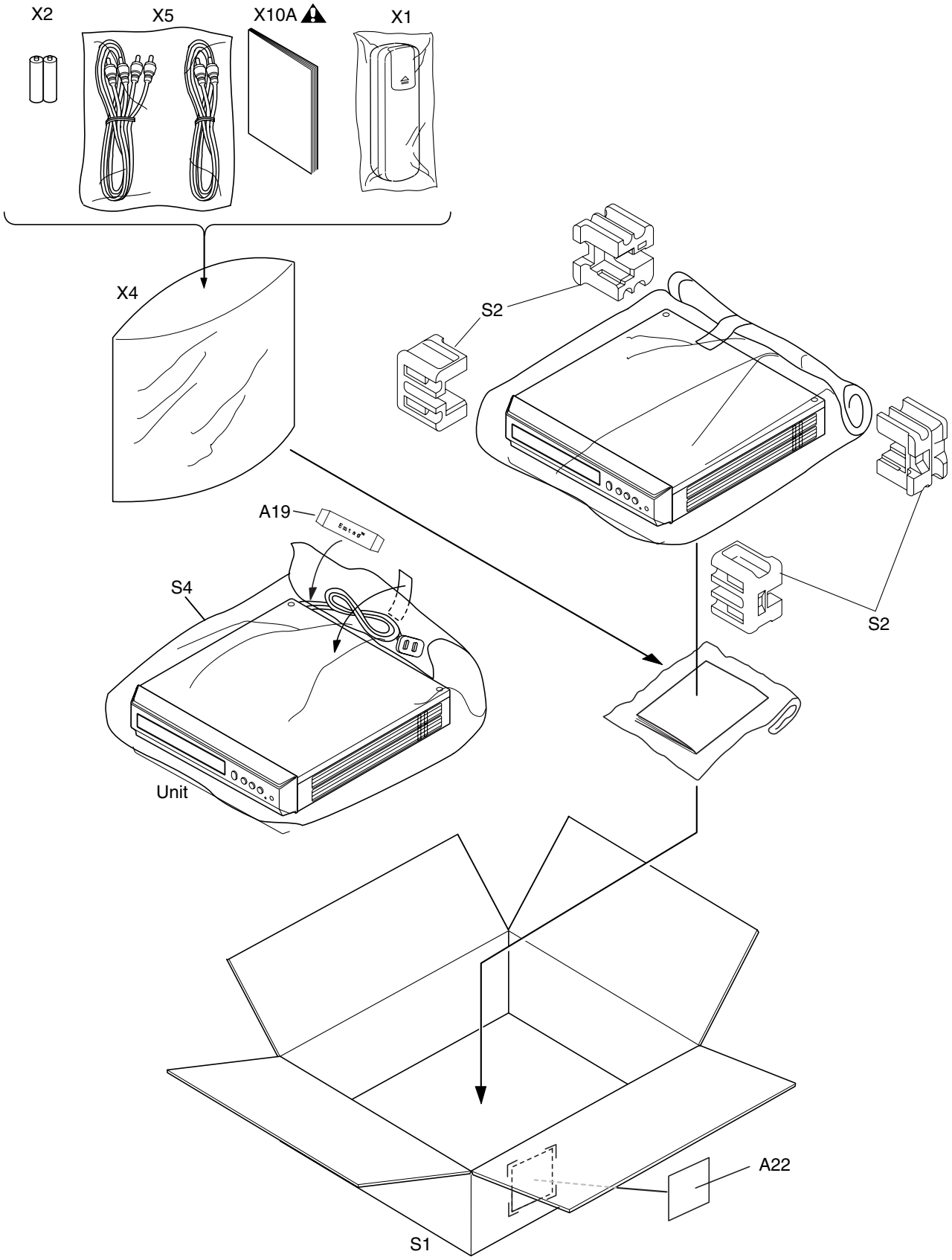
Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference
G: Gate
D: Drain
S: Source

EXPLODED VIEWS

Cabinet



Packing



MECHANICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE:
Parts that are not assigned part numbers (---------) are not available.

Ref. No.	Description	Part No.
A1X	FRONT ASSEMBLY E5960UD	1VM220012
A2	PANEL,TRAY E5960UD	0VM204612
A13	FOOT(REAR) E5710UD	0VM415007
A15	CHASSIS E5 PLASTIC	0VM000211
A16	CASE, TOP E5 PLASTIC	0VM101381
A21	LABEL,MODEL NO. E5960UD	---------
A22	LABEL, BAR CODE E5900UD or	---------
	LABEL,BAR CODE E5960UD	---------
A23	LABEL, TELEPHONE NUMBER H5720UD	---------
1B1	DVD MECHA(FG LESS) 0838 VCZL0500	N79F0HVM
2B5	REINFORCE PLATE E5960UD	1VM320140
2L011	SCREW, P-TIGHT 3X10 BIND HEAD+	GBEP3100
2L021	SCREW, P-TIGHT 3X11 BIND HEAD+	GBMP3110
2L031	P-TIGHT SCREW 3X8 BIND +	GBMP3080
2L041	SCREW, B-TIGHT M3X8 BIND HEAD +	GBKB3080
2L081	SCREW, P-TIGHT M3X8 WASHER+	GCMP3080
2L105	P-TIGHT SCREW 3X8 BIND +	GBMP3080
PACKING		
S1	GIFT BOX,CARTON E5960UD	1VM320047
S2	SIDE PAD E5960UD	1VM120007
S4	SET BAG E5960UD	1VM420147
ACCESSORIES		
X1	REMOTE CONTROL UNIT DVD 0842 VCZF05EE or	NB000UD
	REMOTE CONTROL UNIT DVD 0842 VCZF05EE	NB050UD
X2	DRY BATTERY R6P/2S or	XB0M451T0001
	DRY BATTERY ES-GR6M-C	XB0M571GLP01
X4	ACCESSORY BAG E5700UD	0VM415576
X5	AV CORD TSCKA-Y/RW100 or	WPZ0102TM015
	AV CORD RCA(M*2)TO RCA(M*2)	WPZ0102LTE01
X10A⚠	OWNER'S MANUAL(ENGLISH) E5960UD	1VMN20046

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTES:

1. Parts that are not assigned part numbers (---------) are not available.
2. Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25%	D.....±0.5%	F.....±1%
G.....±2%	J.....±5%	K.....±10%
M.....±20%	N.....±30%	Z.....+80/-20%

DVD MAIN CBA UNIT

Ref. No.	Description	Part No.
	DVD MAIN CBA UNIT	N79F4HUP

AV CBA

Ref. No.	Description	Part No.
	AV CBA Consists of the followings	1VSA10048
	CAPACITORS	
C1001⚠	METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473MS037
⚠	METALLIZED FILM CAP. 0.047µF/250V K	CT2E473DC011
C1003	ELECTROLYTIC CAP. 2.2µF/250V M or	CA2E2R2S6009
	ELECTROLYTIC CAP. 2.2µF/250V M(105C)	CE2EMASTH2R2
C1004	ELECTROLYTIC CAP. 82µF/200V M or	CA2D820S6014
	ELECTROLYTIC CAP. 82µF/200V M	CA2D820NC002
C1005	CERAMIC CAP. CH J 56pF/500V	CCD2JJPCH560
C1006⚠	SAFETY CAP. 2200pF/250V or	CCD2EMA0E222
⚠	SAFETY CAP. 2200pF/250V or	CCG2EMA0F222
⚠	SAFETY CAP. 2200pF/125V	CCG2BMA0E222
C1007	ELECTROLYTIC CAP. 1000µF/6.3V M	CE0KMASDL102
C1009	ELECTROLYTIC CAP. 2200µF/6.3V or	CE0KMASDL222
	ELECTROLYTIC CAP. 2200µF/6.3V M	CE0KMASTL222
C1010	CERAMIC CAP.(AX) CH J 680pF/50V	CA1J681TU008
C1013	FILM CAP.(P) 0.0033µF/50V J or	CMA1JJS00332
	FILM CAP.(P) 0.0033µF/50V J	CA1J332MS029
C1014	ELECTROLYTIC CAP. 1000µF/6.3V M	CE0KMASDL102
C1017	CERAMIC CAP.(AX) Y M 0.01µF/16V	CCA1CMT0Y103
C1022	CHIP CERAMIC CAP.(1608) B K 0.01µF/50V	CHD1JK30B103
C1029	CERAMIC CAP.(AX) X K 2200pF/16V	CCA1CKT0X222
C1034	ELECTROLYTIC CAP. 100µF/6.3V M	CE0KMASDL101
C1035	ELECTROLYTIC CAP. 1000µF/16V M or	CE1CMASDL102
	ELECTROLYTIC CAP. 1000µF/16V M	CE1CMASTL102
C1036	CHIP CERAMIC CAP.(1608) B K 0.01µF/50V	CHD1JK30B103
C1037	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C1038	ELECTROLYTIC CAP. 470µF/6.3V M	CE0KMASDL471
C1039	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C1047	FILM CAP.(P) 0.01µF/100V J or	CMA2AJS00103
	FILM CAP.(P) 0.01µF/100V J	CA2A103MS029
C1048	ELECTROLYTIC CAP. 220µF/16V M	CE1CMASDL221
C1050	ELECTROLYTIC CAP. 220µF/6.3V M	CE0KMASDL221
C1201	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASDL100
C1202	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASDL100
C1205	CHIP CERAMIC CAP. CH J 220pF/50V	CHD1JJ3CH221
C1206	CHIP CERAMIC CAP. CH J 220pF/50V	CHD1JJ3CH221
C1207	CHIP CERAMIC CAP.(1608) CH J 47pF/50V	CHD1JJ3CH470
C1208	CHIP CERAMIC CAP.(1608) CH J 47pF/50V	CHD1JJ3CH470
C1221	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASDL100
C1222	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASDL100
C1223	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C1224	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C1245	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C1246	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C1247	ELECTROLYTIC CAP. 470µF/6.3V M	CE0KMASDL471
C1249	ELECTROLYTIC CAP. 47µF/16V M H7	CE1CMASSL470
C1351	CHIP CERAMIC CAP.(1608) B K 0.1µF/25V	CHD1EK30B104
C1352	ELECTROLYTIC CAP. 47µF/6.3V M H7 or	CE0KMASSL470
	ELECTROLYTIC CAP. 47µF/6.3V M	CE0KMASDL470
C1354	CHIP CERAMIC CAP.(1608) CH J 100pF/50V	CHD1JJ3CH101
C1355	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
C1394	ELECTROLYTIC CAP. 47µF/10V M	CE1AMASDL470
C1395	ELECTROLYTIC CAP. 1000µF/6.3V M	CE0KMASDL102
C1402	ELECTROLYTIC CAP. 470µF/6.3V M	CE0KMASDL471
C1422	CHIP CERAMIC CAP.(1608) B K 0.1µF/25V	CHD1EK30B104
C1423	CHIP CERAMIC CAP.(1608) B K 0.01µF/50V	CHD1JK30B103
C1441	CHIP CERAMIC CAP.(1608) B K 0.33µF/10V	CHD1AK30B334
C1442	ELECTROLYTIC CAP. 1000µF/6.3V M	CE0KMASDL102
C1522	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASDL100
C1524	ELECTROLYTIC CAP. 100µF/6.3V M	CE0KMASDL101
C1531	CHIP CERAMIC CAP.(1608) B K 0.01µF/50V	CHD1JK30B103
C1532	ELECTROLYTIC CAP. 22µF/6.3V M H7 or	CE0KMASSL220
	ELECTROLYTIC CAP. 22µF/6.3V M	CE0KMASDL220
C1533	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C1534	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C2031	ELECTROLYTIC CAP. 100µF/6.3V M	CE0KMASDL101
C2032	CHIP CERAMIC CAP.(1608) F Z 0.1µF/50V	CHD1JZ30F104
C2034	CHIP CERAMIC CAP.(1608) CH J 1000pF/50V	CHD1JJ3CH102
C2101	CHIP CERAMIC CAP. F Z 1000pF/50V	CHD1JZ30F102
	CONNECTORS	
CN1601	12P FFC AV PCB TO MAIN	WX1E5960-001
CN2002	22P FFC AV PCB TO MAIN	WX1E5900-001
	DIODES	
D1001	RECTIFIER DIODE 1N4005 or	NDQZ001N4005
	RECTIFIER DIODE 1N4005	NDWZ001N4005
D1002	RECTIFIER DIODE 1N4005 or	NDQZ001N4005
	RECTIFIER DIODE 1N4005	NDWZ001N4005
D1004	RECTIFIER DIODE 1N4005 or	NDQZ001N4005
	RECTIFIER DIODE 1N4005	NDWZ001N4005
D1005	RECTIFIER DIODE 1N4005 or	NDQZ001N4005
	RECTIFIER DIODE 1N4005	NDWZ001N4005
D1006	SCHOTTKY BARRIER DIODE SB140 or	NDQZ000SB140
	SCHOTTKY BARRIER DIODE SB140 or	NDWZ000SB140
	SCHOTTKY BARRIER DIODE ERA81-004	QDPZERA81004
D1008	SCHOTTKY BARRIER DIODE SB140 or	NDQZ000SB140
	SCHOTTKY BARRIER DIODE SB140 or	NDWZ000SB140
	SCHOTTKY BARRIER DIODE ERA81-004	QDPZERA81004
D1011	RECTIFIER DIODE BA157 or	NDQZ000BA157

Ref. No.	Description	Part No.
	RECTIFIER DIODE BA157 or	NDWZ000BA157
	FAST RECOVERY DIODE ERA18-04	QDPZ0ERA1804
D1012	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1018	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1024	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1SS133(T-77)	QDTZ001SS133
D1030	RECTIFIER DIODE FR202-B/P or	NDQZ000FR202
	FAST RECOVERY DIODE FR202 or	NDWZ000FR202
	FAST RECOVERY DIODE ERB32-01L3	QDQZ0ERB3201
D1046	ZENER DIODE DZ-5.6BSCT265 or	NDTC0DZ5R6BS
	ZENER DIODE MTZJT-775.6C	QDTC0MTZJ5R6
D1047	ZENER DIODE DZ-5.6BSBT265 or	NDTB0DZ5R6BS
	ZENER DIODE MTZJT-775.6B	QDTB0MTZJ5R6
D1048	ZENER DIODE DZ-15BSAT265 or	NDTA00DZ15BS
	ZENER DIODE MTZJT-7715A	QDTA00MTZJ15
D1051	ZENER DIODE DZ-6.2BSBT265 or	NDTB0DZ6R2BS
	ZENER DIODE MTZJT-776.2B	QDTB0MTZJ6R2
D1053	PCB JUMPER D0.6-P10.0	JW10.0T
D1054	PCB JUMPER D0.6-P10.0	JW10.0T
D1058	SCHOTTKY BARRIER DIODE SB140 or	NDQZ000SB140
	SCHOTTKY BARRIER DIODE SB140 or	NDWZ000SB140
	SCHOTTKY BARRIER DIODE ERA81-004	QDPZERA81004
D1059	PCB JUMPER D0.6-P10.0	JW10.0T
D1073	PCB JUMPER D0.6-P5.0	JW5.0T
D1301	ZENER DIODE DZ-5.6BSBT265 or	NDTB0DZ5R6BS
	ZENER DIODE MTZJT-775.6B	QDTB0MTZJ5R6
D2023	LED(RED) 204HD/E	NPQZ00204HDE
	ICS	
IC1001⚠	PHOTOCOUPLER LTV-817B-F or	NPEB0LTV817F
⚠	PHOTOCOUPLER LTV-817C-F or	NPEC0LTV817F
⚠	PHOTOCOUPLER PS2561A-1(W) or	QPEWPS2561A1
⚠	PHOTOCOUPLER PS2561A-1(Q)	QPEQPS2561A1
IC1002	VOLTAGE REGULATOR PQ070XZ5MZP	QSZBA0TSH034
IC1006	IC:SHUNT REGULATOR KIA431-AT or	NSZLA0TJY001
	VOLTAGE REGULATOR FAN431AZXA	NSZBA0TF3102
IC1201	IC:OP AMP KIA4558P or	NSZBA0SJY004
	IC:OP AMP NJM4558D	QSZBA0SJR006
IC1401	DRIVER FOR DVD MM1636XWRE	QSZBA0TMM108
	COILS	
L1001⚠	LINE FILTER 20MH SA-00911 or	LLBG00ZSA003
⚠	LINE FILTER 20MH 03905 or	LLBG00ZKT008
⚠	LINE FILTER 20MH MUV105-1126/M0021A	LLBG00ZMMT01
L1007	CHOKE COIL 22µH-K or	LLBD00PKV006
	CHOKE COIL 22µH-K	LLBD00PKT002
L1008	CHOKE COIL 22µH-K or	LLBD00PKV006
	CHOKE COIL 22µH-K	LLBD00PKT002
L1009	CHOKE COIL 22µH-K or	LLBD00PKV006
	CHOKE COIL 22µH-K	LLBD00PKT002
L1011	BEAD CORE B16 RH 3.5X3X1.3	XL03003XM002
L1060	PCB JUMPER D0.6-P5.0	JW5.0T
L1350	INDUCTOR(100µH K) LAP02TA101K	LLAXKATTU101
L1351	INDUCTOR(0.47µH K) LAP02TAR47K	LLAXKATTUR47
L1401	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
L1421	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
L1442	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
L1521	CHOKE COIL 22µH-K or	LLBD00PKV006
	CHOKE COIL 22µH-K	LLBD00PKT002
L1522	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000

Ref. No.	Description	Part No.
L2020	PCB JUMPER D0.6-P5.0	JW5.0T
L2031	INDUCTOR(100µH K) LAP02TA101K	LLAXKATTU101
	TRANSISTORS	
Q1002	TRANSISTOR KTA1267(Y) or	NQSY0KTA1267
	TRANSISTOR 2SA1015-Y(TPE2)	QQSY02SA1015
Q1003	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC2785(H)	QQSH02SC2785
Q1004	TRANSISTOR KTC3199(Y) or	NQSY0KTC3199
	TRANSISTOR 2SC1815-Y(TPE2)	QQSY02SC1815
Q1011	TRANSISTOR KTC3203(Y) or	NQSY0KTC3203
	TRANSISTOR 2SC2120-Y(TPE2)	QQSY02SC2120
Q1014	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC2785(H)	QQSH02SC2785
Q1016	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC2785(H)	QQSH02SC2785
Q1031⚠	FET 2SK3498(T6L1FUNANQ)	QF1Z02SK3498
Q1201	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC2785(H)	QQSH02SC2785
Q1202	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC2785(H)	QQSH02SC2785
Q1204	TRANSISTOR KTA1266(Y) or	NQSY0KTA1266
	TRANSISTOR 2SA1015-Y(TPE2)	QQSY02SA1015
Q1351	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC2785(H)	QQSH02SC2785
Q1352	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC2785(H)	QQSH02SC2785
	RESISTORS	
R1004	METAL OXIDE FILM RES. 1W J 82k Ω or	RN01823ZU001
	METAL OXIDE FILM RES. 1W J 82k Ω or	RN01823DP003
	METAL OXIDE FILM RES. 1W J 82k Ω	RN01823KE009
R1005	CARBON RES. 1/4W J 2.7M Ω	RCX4JATZ0275
R1006	CARBON RES. 1/4W J 2.7M Ω	RCX4JATZ0275
R1008	CARBON RES. 1/4W J 620 Ω	RCX4JATZ0621
R1010	CARBON RES. 1/6W J 15k Ω or	RCX6JATZ0153
	CARBON RES. 1/4W J 15k Ω	RCX4JATZ0153
R1011	METAL OXIDE FILM RES. 1W J 1.2 Ω or	RN011R2ZU001
	METAL OXIDE FILM RES. 1W J 1.2 Ω or	RN011R2DP003
	METAL OXIDE FILM RES. 1W J 1.2 Ω	RN011R2KE009
R1015	CARBON RES. 1/6W J 560 Ω or	RCX6JATZ0561
	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R1016	CARBON RES. 1/6W J 22k Ω or	RCX6JATZ0223
	CARBON RES. 1/4W J 22k Ω	RCX4JATZ0223
R1019	CHIP RES.(1608) 1/16W F 680 0HM	RRXGFR5Z0681
R1020	CHIP RES.(1608) 1/10W J 820 Ω	RRXAJR5Z0821
R1021	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJR5Z0272
R1022	CHIP RES.(1608) 1/10W J 820 Ω	RRXAJR5Z0821
R1023	CHIP RES.(1608) 1/16W F 2.2k Ω	RRXGFR5Z0222
R1025	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1029	CARBON RES. 1/6W J 470k Ω or	RCX6JATZ0474
	CARBON RES. 1/4W J 470k Ω	RCX4JATZ0474
R1032	CARBON RES. 1/6W J 3.3k Ω or	RCX6JATZ0332
	CARBON RES. 1/4W J 3.3k Ω	RCX4JATZ0332
R1035	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R1043	METAL OXIDE FILM RES. 1W J 2.7 Ω or	RN012R7ZU001
	METAL OXIDE FILM RES. 1W J 2.7 Ω or	RN012R7DP003
	METAL OXIDE FILM RES. 1W J 2.7 Ω	RN012R7KE009
R1044	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJR5Z0104
R1059	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R1067	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R1068	CARBON RES. 1/6W J 820 Ω or	RCX6JATZ0821

Ref. No.	Description	Part No.
	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R1069	CARBON RES. 1/6W J 560 Ω or	RCX6JATZ0561
	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R1071	PCB JUMPER D0.6-P15.0	JW15.0T
R1072	CHIP RES.(1608) 1/10W J 330 Ω	RRXAJR5Z0331
R1073	METAL RESISTOR 2W J 39 Ω or	RN02390ZU001
	METAL OXIDE FILM RES. 2W J 39 Ω or	RN02390DP004
	METAL OXIDE FILM RES. 2W J 39 Ω	RN02390KE010
R1074	RECTIFIER DIODE 1N4005 or	NDQZ001N4005
	RECTIFIER DIODE 1N4005	NDWZ001N4005
R1075	CHIP RES. 1/16W F 10 Ω	RRXGFR5Z0100
R1076	CHIP RES. 1/16W F 1k Ω	RRXGFR5Z0102
R1077	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1080	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
R1081	CHIP RES. 1/16W F 82 Ω	RRXGFR5Z0820
R1082	CHIP RES.(1608) 1/10W 0 Ω	RRXAZR5Z0000
R1092	PCB JUMPER D0.6-P5.0	JW5.0T
R1095	CHIP RES.(2125) 1/8W J 0.1 Ω or	RRX8R10HH005
	CHIP RES.(2125) 1/4W J 0.1 Ω	RTCR100KE003
R1098	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R1205	CHIP RES.(1608) 1/16W F 20k Ω	RRXGFR5Z0203
R1206	CHIP RES.(1608) 1/16W F 20k Ω	RRXGFR5Z0203
R1207	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJR5Z0822
R1208	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJR5Z0822
R1209	CHIP RES. 1/16W F 30k Ω	RRXGFR5Z0303
R1210	CHIP RES. 1/16W F 30k Ω	RRXGFR5Z0303
R1211	PCB JUMPER D0.6-P5.0	JW5.0T
R1212	PCB JUMPER D0.6-P5.0	JW5.0T
R1221	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJR5Z0104
R1222	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJR5Z0104
R1223	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJR5Z0471
R1224	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJR5Z0471
R1225	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R1226	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R1227	CHIP RES.(1608) 1/10W J 220 Ω	RRXAJR5Z0221
R1228	CHIP RES.(1608) 1/10W J 220 Ω	RRXAJR5Z0221
R1236	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R1238	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R1240	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJR5Z0104
R1245	CHIP RES.(1608) 1/10W J 10 Ω	RRXAJR5Z0100
R1351	CHIP RES.(1608) 1/10W J 2k Ω	RRXAJR5Z0202
R1352	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R1353	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJR5Z0222
R1354	CHIP RES.(1608) 1/10W J 220 Ω	RRXAJR5Z0221
R1355	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R1356	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJR5Z0104
R1392	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R1396	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJR5Z0471
R1397	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJR5Z0471
R1402	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R1421	CHIP RES. 1/10W F 160 Ω	RRXGFR5Z0161
R1422	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R1441	CHIP RES. 1/10W F 160 Ω	RRXGFR5Z0161
R1442	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJR5Z0750
R2012	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R2013	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R2014	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R2015	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJR5Z0102
R2016	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R2017	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R2018	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R2019	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R2023	CARBON RES. 1/6W J 220 Ω or	RCX6JATZ0221
	CARBON RES. 1/4W J 220 Ω	RCX4JATZ0221
R2031	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJR5Z0682
R2032	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJR5Z0103
R2033	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJR5Z0223
	SWITCHES	
SW2001	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW2002	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW2003	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
SW2004	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH SKQSAF001A or	SST0101AL041
	TACT SWITCH TC-1104(H=9.5)	SST0101DNG01
	MISCELLANEOUS	
AC1001⚠	AC CORD PB8B2F9110A-055	WAC0162LW004
F1001⚠	FUSE 1A/250V or	PAGA20CW3102
⚠	FUSE SIC 1A 250V U/C T or	PAGG20CW3102
⚠	FUSE 1A/250V	PAGG20CAG102
FH1001	FUSE HOLDER MSF-015	XH01Z00LY001
FH1002	FUSE HOLDER MSF-015	XH01Z00LY001
JK1201	2PIN JACK MSD-242V-01 NI	JXRL020LY067
JK1202	RCA JACK(BLACK) MSP-251V-01 NI or	JXRL010LY070
	RCA JACK(BLACK) AV1-28A-1	JXRL010RP024
JK1401	S TYPE JACK MDC-050V-2.4	JXEL040LY001
JK1402	RCA JACK(YELLOW) MSP-251V-02 PBSN	JXRL010LY017
RM2001	REMOTE RECEIVER MIM-93M6DKF or	USESJRSUNT01
	REMOTE RECEIVER PIC-37042LU	USESJRSKK033
SA1001⚠	SURGE ABSORBER 470V+-10PER or	NVQZ10D471KB
⚠	SURGE ABSORBER CNR-10D471K	NVQZR10D471K
T1001⚠	PULSE TRANS CGS-SW0005A or	LTT00CPSA155
⚠	PULSE TRANS 04715	LTT00CPKT128
W1006	EARTH WIRE	WX1E5960-002

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